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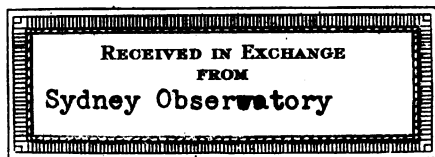
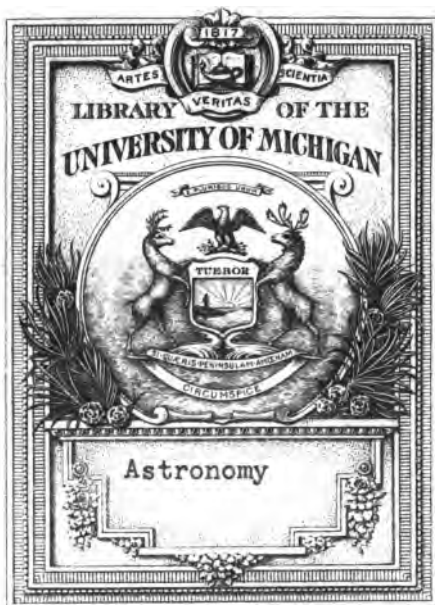
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SYDNEY  
OBSERVATORY

DOUBLE STAR RESULTS,  
1871-1881.



Astronomical  
Observatory

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Q3

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*Sydney Observatory*

# RESULTS

OF

# DOUBLE STAR MEASURES

MADE AT THE

SYDNEY OBSERVATORY, NEW SOUTH WALES,

1871 to 1881,

UNDER THE DIRECTION OF

H. C. RUSSELL, B.A., F.R.A.S.,

GOVERNMENT ASTRONOMER FOR NEW SOUTH WALES.



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*Astron. Observations, ditto*  
*Hydrom. Observations*  
*5.26.47*

## New Double Stars, and Measures of some of those found by Sir John Herschel.

By H. C. RUSSELL, B.A., F.R.A.S., Government Astronomer.

[Read before the Royal Society of N.S.W., 7 September, 1881.]

THE study of double stars is, I think, one of the most fascinating which astronomy gives to us. The great number and variety of the objects already known, and the certainty that many new ones will be the reward of any diligent search for them, keep up the interest to such an extent that the observer needs no other incentive to his work. M. Flammarion, after an examination of the observations already made—and be it remembered that this branch of astronomy may be said to have been originated by Sir William Herschel, about the year 1800—finds that there are 11,000 double and multiple stars catalogued. Of these, 819 give certain indication of relative movement; of which 731 are double, 73 triple, 12 quadruples, 2 quintuples, 1 sextuple; of these again, 518 seem to form orbital systems, and 316 are only united by celestial perspective. Observation further shows that the components of an orbital system may be separated by as much as 22", and two stars separated by 15' of arc may have a common proper motion. Again, Mr. Doberck, after a critical examination of double stars, considers that orbits of only twenty-seven are known, and of these only seven are in the Southern Hemisphere. We know five stars whose period is under fifty years; seven with periods from 50 to 100 years; six between 100 and 200 years; six between 200 and 350 years; three over 400 years. If, in addition to these statistics, we bear in mind that the Southern Hemisphere is only in part explored, and that in the Northern Hemisphere, which has been examined over and over again with fine instruments, used by such observers as Sir William Herschel, Struve, and others, it has been recently shown to be possible, with moderate or small telescopes and good eyes, to find many new and difficult objects, as Mr. Burnham has done, I think you will see that there is justification for the opinion which I have just expressed, and that the observer, in watching these objects for changes, and then in the investigation of them to see whether they are due to the motion of one star round the other, to independent motion of the stars, or to the annual motion of the earth, has his interest constantly maintained; and it is not lessened by the fact that he may go on thus for years making



observations which seem to prove that there is orbital motion, only to find in the end that the changes he sees are due to independent motion, as I endeavoured to show you last year in reference to  $\rho$  Eridani, in the supposed orbit of which, as the observations accumulated, the ellipse had gradually to be increased, until in the end the most probable curve, if I may so express myself, was shown to be a straight line, or, in other words, the motion which was supposed to prove it a binary is found to be probably due to proper and not orbital motion at all. I may mention in passing, that if subsequent observation confirms this, the southern binaries referred to by Mr. Doberck will be reduced to six.

Before proceeding to give you some of the results of my own work on our southern double stars, it will be necessary to spend a few moments in describing the instruments and methods of observation. The first instrument with which the work was begun is a very fine  $7\frac{1}{4}$ -inch refractor by Merz, of 10 ft. 4 in. focal length, and very fine defining power; upon this is a position circle micrometer by the same maker, with  $4\frac{1}{2}$  in. position circle, and means of dark and bright wire illumination, and magnifying powers up to 580. For easy stars a power of 159, and for more difficult ones 330 was used; and the method of observing was, first to place the position wire so that it bisected both stars, and then to bisect each of the stars with one of the parallel wires. After which circle and micrometer were read. The wires were then crossed and the circle thrown out of position, and again the wires were brought to bisect the stars as before, and circle and micrometer again read. Hence two independent determinations of the angle, and two readings for the distance, the difference of which gives twice the angular difference between the stars. In reducing these, the two readings of the micrometer were in some cases compared with the coincidence of wires reading to get two measures; at other times the difference between the readings divided by 2 was taken. The result was the same whichever way it was taken. As the latter involved the smaller amount of computation, it has generally been adopted. In many cases ten readings of the micrometer were taken, that is, ten measures of angle and ten of distance; but in the majority of cases only six have been taken. When the stars are very close, the method of setting the wires to the apparent distance of the stars has been frequently adopted, and found more satisfactory than the other method. In a few instances the distance has been obtained by placing one of the wires between the stars, and from its known diameter and its relation to the distance of the centres, estimating the distance.

The other telescope, used since 1874, is a very fine  $11\frac{1}{2}$ -inch objective,  $12\frac{1}{2}$ -ft. focus, by Schröder, with position circle micrometer by the same maker. The illumination of wires (bright) is

obtained by four prisms placed near them, and the light from a small gas flame reflected into the side of the telescope. The magnifying powers are from 100 to 1,500, the power 800 being used for all difficult objects. The same method of observation as used with the Merz instrument has been continued with the 11½-inch. Since 1879 the 7¼-inch telescope has been set up in the north dome, and has been used by Mr. Hargrave in measuring Herschel's stars and verifying the positions of new stars.

About 746 of Herschel's stars have been remeasured, some of them many times over, and 350 new double stars have been found. The results are appended, representing in this small compass some 15,000 measures of angle and distance.

For the sake of completeness I have included, in the general list, the few stars mentioned in my paper read before the Society last year.

With regard to other matters affecting the observations, I may mention that both the domes are made of thin brass, and the temperature is always very nearly the same inside as it is outside; hence the work could be begun as soon as the shutters were opened. It has been my practice to observe stars on the meridian, or very near to it, and always taking the R.A. by means of the instrument, the hour circle readings show the distance from the meridian when the observations were finished. In some instances bright stars have been measured during the day-time, but generally the aperture has been reduced to get rid of the excessive light of bright stars.

In entering the notes at the time of observation, a diagram showing the estimated distance and angle has been made in almost every case.

A few words about the list of 350 new double stars, which I have the honor to present to the Society to-night. They cannot be said to be the fruits of a search for new stars, for except an evening now and then devoted to that work, and some time recently given to it at my request by Mr. Hargrave, my object has been to re-examine Sir John Herschel's Cape list between 34° south and the pole. It would have been very easy to double the number even under these circumstances, if I had adopted the same limit of distance as Sir John Herschel; but I was anxious to avoid burdening the list in that way, and made my limit much smaller, and was always more anxious to record close pairs than wide ones. Nine of the new ones are under one second of arc\*—several of them very difficult. Sixty-six are under five seconds, others under twenty-five seconds, and all of them are between the parallel 42° south and the pole, with one exception, which was found in the field of view with one of h.'s stars. As they are so far south

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\* In 2102 stars Herschel has only 25 of 1" and under.

they are out of the reach of northern observers, and, so far as I can learn from published lists, they are new; but hereafter, when the work of several double star observers in the southern hemisphere is published, it may be that some will be found in other lists.

Many of them are very close and otherwise interesting doubles; and there is every probability, seeing that h. overlooked them when in close proximity to stars that he observed, that some of them will prove to be binaries.

Only a few of them have as yet been repeatedly measured, but of these several show signs of motion. One at 12h. 4m.  $60^{\circ} 21'$  was found in April, 1873, and then the measured angle was  $212.35''$ , in May, 1880, it was  $209.55''$ ; at first the distance was  $4.33''$ , last year it was  $3.87''$ , showing a change of  $3''$  in angle and  $0.46''$  in distance. Another at 15h. 50m., and dec.  $65^{\circ} 37'$  in July 31, 1872, angle  $134^{\circ} 12'$ , dist.,  $2.43''$ ; on July 21, 1880, angle  $131^{\circ} 19'$ , distance  $1.91''$ , again showing a change of  $3''$  and  $0.52''$ . Another very difficult pair at 10h. 45m., dec.  $58^{\circ} 38'$  found in March, 1874, angle  $256^{\circ}$ , distance  $\frac{1}{2}$  a second, and in March, 1880, angle  $258.81^{\circ}$ , distance  $1.15''$ ; this one I have mentioned in the paper on double stars last year, but place it here for completeness.

Another star at  $13^{\circ} 0m. 59.14''$ , found in April, 1880, gives some indication of increasing distance, which, when first measured, was  $0.33''$ , and when last seen was  $0.70''$ .

Amongst the h. stars observed are all those which are or have been supposed to be in motion; of these *p* or 6 Eridani is one of the most interesting; orbits have several times been computed for it, and I found that my earlier observations required a considerable extension of the period, but the later ones demanded more still; in fact, a straight line accords better with all the observations made subsequent to Herschel's than any ellipse, and it would appear that the changes are due simply to proper motion; of this I think there cannot be any doubt; and it would appear from the meridian observations made at the Cape and Madras that it is the preceding star which is in motion, not the following one—h.'s and Dunlop's observations will not plot into the straight line, but it must be remembered that Dunlop had a very imperfect telescope and only guessed the distance; and h.'s angle does agree, the distance only being too little—a fault the possibility of which no one would have more readily admitted than h. himself. (See diagram.)

Alpha Centauri. It will be seen from the observations that periastron did not take place as predicted, in March, 1875, but in March, 1878, three years after. A great many measures of this binary will be found in the catalogue. At present the distance is increasing rapidly. (See diagrams showing plot of Sydney Observations.)

Some of h.'s stars present considerable difficulty, and are probably in motion, as for instance 4786  $\gamma$  Lupi, an easy double in 1836 is now a single star, with the highest powers on the large equatorial. The motion is evidently slow, and it is remarkable that Herschel says of this star, "Cleanly divided with power 480 and the black division well seen, well separated with power 800"; and of  $\pi$  Lupi he says, "I do not think measures of this star will be got with this instrument." "Excessively difficult. It is closer than  $\gamma$  Lupi, for the discs are smaller, and yet are not so much divided." Now I found  $\pi$  Lupi quite an easy object, and the mean of my measures make the distance 0.73", while Herschel made it 0.67", so that there has been no great change in this star. But  $\gamma$  Lupi, which h. found so easy, I have examined a great many times and always failed to divide it even with the greatest powers on the large refractor.

Another star of the same character it would seem is h. 4854. h. classes this as "very difficult to be verified." On June 4, 1872, at the end of my evening's work, I looked at it and divided it easily with power 230; I only took one measure, making the angle  $46^{\circ} 25'$ , and the distance 1.75", being satisfied that in this case, as in many others, that what was very difficult in Herschel's reflector was very easy in the Sydney refractor. By some chance I did not look at this star again until June 17, 1874, and to my surprise I could not divide it with any power. On July 16, 1880, I carefully examined it with the large telescope, and found only a round disc with all powers; so that we have here another interesting double in which the character of the motion has yet to be determined.

But it would take too long to go over all the cases of real or supposed change, and I have therefore collected them into a list, giving only bare measures, more details being found in the catalogue of stars measured. In all there are twenty-two stars which either give satisfactory indications of motion or have at some time been supposed to be in motion.

I have added another list of seventeen interesting objects, being such double stars as have been found in the same field of view as stars which Herschel measured, and which therefore we are justified in assuming that he looked at without discovering their character. Of these no doubt some must be set down as too difficult for the reflector; three, h. 3370, 4935, and 5078, have the large star double, but there are several instances in which the only satisfactory explanation is that the stars have changed since he looked at them. Perhaps the most striking case is 4909, where he was struck with the beauty of the group, and went on to describe it particularly, and he left out what is now one of its most striking features—a star within the pentagon, quite as bright as three of the stars he mentions. His descriptions of such things are as a rule so accurate that I am convinced the additional star has

appeared since Herschel looked at the object. As another case I may mention h. 4890, which he is careful to say "is in a vacancy in the Milky Way, which is here entirely free of ground stars," yet only 11s. following 4890; in fact, where h. must have seen it if then visible, I find a beautiful double star, magnitudes 11 and 11, and in a field of 80s. diameter sixteen other stars, and the telescope then (1871) used was  $7\frac{1}{2}$ , while h. used the large reflector. There are others in the list of the same character, but I must pass on to notice changes in the magnitudes of some of the double stars. One is rather curious. In December, 1834, Herschel observed No. 3972 in his list, and called the magnitudes  $8\frac{1}{2}$  and  $8\frac{1}{2}$ ; on March 7th, 1836, he looked again and called them  $9\frac{1}{2}$  and 11; next night he verified this, making them 10 and 11. In 1834 he saw a 13 magnitude star which made an obtuse and nearly isosceles triangle with the other two, and he subsequently remarks it must have been ill seen (in 1836), as is evident by the magnitudes assigned, and from the fact that the 13 magnitude was invisible. When in 1873 I examined this, the magnitudes were  $10\frac{1}{2}$  and 12, and I could not see the little star; it would seem therefore that they must have been brighter in 1834. The night in 1873 was not favourable, but h. 4130 was examined at the same time, and the magnitude then assigned 8-10, or the same as h.'s.

There are many stars in the Cape list that cannot be found. Over some of these I have spent a good deal of time to see if they were cases of fading stars or change of position; the result has not been satisfactory in most of the cases traced—they are evidently the result of clerical errors; for instance, entering a star with the wrong R.A. or declination. Probably most of those on the list of missing stars are of this character, but some may have been overlooked from changed magnitudes and other causes. Perhaps the number (forty-six) is not surprising when we consider the difficulty of the work as carried on by Herschel.

I have not given much attention to colours, nor have I carefully compared my estimates of colour with h.'s, but one or two instances have been found of apparent decided change. h. 5193 he says the large star is "very red"; I could not see any red in it in 1873 when I remeasured it.

In several cases I see decided colours where h. mentions none; these will be found in the list attached.

In conclusion, I may say that my object has been to remeasure all h.'s close stars south of  $34^\circ$  south declination. In very many cases considerable differences between h.'s observations with the reflector and mine have been found; but a complete list of them has not been made, because the reflector observations so often differ from those h. made with his equatorial that it did not appear to be worth while.

## Instances of change—real or supposed (23 stars).

h.'s No.	
3407 .....	h.'s angle $78^{\circ} 30'$ to $80^{\circ} 51'$ ; R., $80^{\circ} 12'$ ; probably not in motion.
$\lambda$ Toucani.	
3423 .....	h.'s angle, $17^{\circ} 50'$ , dis. $5.78''$ ; R., $0.8^{\circ}$ dis. $5.34''$ .
K Toucani.	
3453 .....	h.'s angle, $122^{\circ} 6'$ , dis. $3.39''$ ; R., $234^{\circ} 41'$ , dis. $6.30''$ ;
$p$ or 6 Eridani.	all the later observations plot into a straight line as if the motion were proper, not binary.
3835 .....	h.'s angle, $343^{\circ}$ , dis. $4''$ ; R., $2^{\circ} 6'$ , dis. $2.90''$ ; and 1882 R. $2.35''$ , angle $11^{\circ} 39'$ .
3930 .....	h.'s angle, $72^{\circ} 43'$ , dis. $3.49''$ ; R., $77^{\circ} 5'$ , dis. $2.82''$ ; probably not binary.
4025 .....	Triple h.'s angles, $47^{\circ} 6'$ & $34^{\circ} 8'$ , dis. $18''$ & $40''$ ; magnitudes, 6-14 & 6-12; H. angles, $69^{\circ} 53'$ & $37^{\circ} 40'$ .
4106 .....	h. $139^{\circ} 18'$ ; R. $143^{\circ} 8'$ .
4373 .....	h.'s angle, $226^{\circ} 1'$ , dis. $25''$ ; H., $338^{\circ} 18'$ , dis. $12.66''$ .
4507 .....	h.'s angle, $227^{\circ} 4'$ , dis. $20''$ ; H., $180^{\circ} 26'$ , dis. $12.94''$ .
4521 .....	h.'s angle, $119^{\circ} 48'$ to $122^{\circ} 57'$ , dis. $4.96''$ to $6.62''$ ; R., $117^{\circ} 27'$ , dis. $5.34''$ ; motion improbable.
4539 .....	h.'s angle, $346^{\circ} 47'$ to $361^{\circ} 58'$ , dis. $\frac{3}{4}$ to $1''$ ; R., 1880, angle $1^{\circ} 16'$ , dis. $1.39''$ . Motion doubtful.
$\gamma$ Centauri.	
4645 .....	h.'s angle, $231^{\circ} 8'$ ; H., $202^{\circ} 11'$ , 1881.
4691 .....	For complete measures, see list.
$\alpha$ Centauri.	
4728 .....	h.'s angle, $108^{\circ} 30'$ to $115^{\circ} 35'$ , dis. $0.67''$ to $1.01$ ; R., 1880, $99^{\circ} 18'$ , dis. $0.90''$ . h. said this is closer than $\gamma$ Lupi. R., with the Sydney refractor, found this an easy object, while $\gamma$ Lupi is too difficult to divide; one or other must have changed.
$\pi$ Lupi.	
4786 .....	h.'s angle, $90^{\circ} 10'$ to $104^{\circ} 30'$ , dis. $\frac{3}{4}$ to $1''$ ; R., 1880, with power 1,200 seems to be elongated, angle $270^{\circ}$ E.; but though I have often tried I never can divide it. See note to $\pi$ Lupi.
$\gamma$ Lupi.	
4852 .....	h.'s angle, $115^{\circ}$ , dis. $6''$ ; H. angle, $145^{\circ} 8'$ , dis. $14.66''$ .
5014 .....	h.'s angle, $69^{\circ}$ , dis. $0.67''$ ; R., $79^{\circ} 18'$ , dis. $0.81$ ; but as h.'s angles range from $61^{\circ}$ to $76^{\circ}$ , it is probably not binary.
5041 .....	h.'s angle, $260^{\circ} 5'$ , dis. $2''$ ; R., 1871, $253^{\circ} 35'$ , dis. $3.27''$ ; R., 1873, $259^{\circ} 52'$ , dis. $3.11''$ ; H., 1880, $264^{\circ} 52'$ , dis. $1.82''$ .
5027 .....	h.'s angle, $59^{\circ} 2'$ ; R., 1871, $84^{\circ} 42'$ ; H., 1881, $91^{\circ} 52'$ ; showing change of $25^{\circ}$ in thirty-five years, and $7^{\circ}$ in ten years.
5078 .....	h.'s angle, $313^{\circ} 4'$ ; H., $212^{\circ} 50'$ . Is this a clerical error, $313^{\circ}$ for $213^{\circ}$ in Cape list?
5084 .....	h.'s angle, $37^{\circ} 6'$ , dis. $1.23''$ ; R. angle, $53^{\circ} 8'$ , dis. $1.15''$ .
$\gamma$ Cor. Aust.	
5246 .....	h.'s angle, $116^{\circ} 8'$ , dis. $1\frac{1}{2}''$ ; R. angle, $129^{\circ}$ , dis. $3.82''$ .
5258 .....	h.'s angle, $307^{\circ} 31'$ , dis. $3.65''$ ; R. angle, $288^{\circ} 50'$ , dis. $4.68''$ .
$\theta$ Indi.	

(17 objects.)

Instances in which h. must have looked at double stars, if they were then double, without seeing them.

h.'s No.	
3370.....	Large star, double, R. No. 3.
3464.....	In same field with this is a small triangle of stars—the preceding one of which is a close double not seen by h., R. No. 11.
3499.....	Another double, precedes this only 15', R. No. 16.
3843.....	Another wide double in the field north following this, not seen by h.
3959.....	Another north, and only 12' following, R. No. 74.
4077.....	Another double in the field with this, R. No. 82.
4122.....	Another a little south and in same field, R. No. 86.
4645.....	Two pairs in the field with this, R. Nos. 238 & 239.
4787.....	Two doubles in field with this, R. Nos. 265 & 266.
4835.....	Another double, 6' following this, R. No. 273.
4890.....	Another double in field, 11' following, and 16 other stars. h. says, "This is in a vacancy of the Milky Way, which is here entirely free from ground stars." R. No. 285.
4909.....	h. says, "This is a very symmetrical little constellation, of two large and three of 12 magnitude, forming a pentagon in a direction at right angles to the two large stars at its base." On 22 July, 1872, I found a small star very conspicuous within this pentagon, and adding much to its beauty. h. would certainly have mentioned it if seen. R. 289.
4935.....	Large star, double, R. No. 298.
5075.....	h. says nearest star is distant 15'; R. finds nearest is one of a pretty triangle; seems strange h. did not say so.
5078.....	Large star is double, R. No. 317.
5256.....	Another double in field with this, R. No. 328; and another precedes 65' and 15' north.
5292.....	Another double precedes this 60', R. No. 336.

## List of 46 h. stars looked for and not found.

h.'s No.	
3366	
3393	
3897	
3530.....	Could not see either.
3577	
3590	
3648	
3678	
3719	
3748.....	Same as 3641.
3790	
3837	
3851	
3870	
3872	
3884	
3895	
3979	
4030.....	And 4038 probably same.
4085	
4130.....	And 4142 probably same.

List of 46 h. stars looked for and not found—*continued*

h.'s No.	
4390	
4480	
4504	
4544	
4596	h.'s decln. $65^{\circ} 10'$ pair at $64^{\circ} 10'$ .
4628	No companion.
4695	
4707	
4840	Probably same 4836.
4854	Single star now.
4858	
4906	
4959	
4975	
4979	Looked for several times
4996	
4998	
5006	
5008	
5103	
5234	
5267	
5319	
5385	
5437	

## Instances of change in magnitude or colour.

h.'s No.	
3419	h. does not mention colour ; R. sees greenish yellow and copper red.
3962	h. calls magnitudes 8 and 10 ; R. several times 8 and $8\frac{1}{2}$ .
3972	h. calls magnitudes $8\frac{1}{2}$ and $8\frac{3}{4}$ , 24 December, 1834, and $9\frac{1}{4}$ and 11 on 7 March, 1836, and 10 and 11, 8 March, 1836 ; R., 1873, $10\frac{1}{2}$ and 12 ; h. makes the remark, "A 13 mag. star—makes an obtuse angle and nearly isosceles triangle with these two ; it does not appear to have been noticed in either of the other observations, in which the stars must have been ill seen, as is evident by the magnitudes affixed"; but then R., 1873, made them $10\frac{1}{2}$ and 12 (?) variable.
3977	h. 8-9 now 9-13.
4104a	h. white and blue ; R. yellow and blue.
4104b	h. no colour ; R. yellow and white.
4539	h. examined this star four times,—on three it was badly defined ; I have examined it three times, and twice it was badly defined. Can there be any peculiarity about the star ?
$\gamma$ Centauri.	
4813	h. does not mention colour ; R. sees yellow and blue.
4890	h. says, "This pair of 8 and 9 magnitudes is in a vacancy of the Milky Way which is here entirely free of ground stars"; and on 13 July, 1871, when I looked at it with $7\frac{1}{4}$ -inch telescope I found a pretty double star of 10 and 11 magnitudes, only 11" following h.'s. star, and in a field 80s. in diameter ; I counted twenty stars from 9 mag. downwards, i.e., two double and sixteen other stars.
5193	h. says large star very red ; R. cannot see it red at all.
5292	h. mag. $7\frac{1}{2}$ -10 ; R. 10-11 (?) change.



## Errors in Cape Catalogue.

h.s. No.	
3748.....	} No star at 5h. 13m., but there is at 4h. 13m., and this star is numbered 3641.
3641.....	
4030.....	} Probably same star.
4038.....	
4130.....	} Probably same star.
4142.....	
4272.....	R. A. 6m. too large. Should be 9h. 48m.
4596.....	h.'s declination is $65^{\circ} 7'$ ; star is at $64^{\circ} 16'$ .
4684.....	Cannot find a double here.
4836.....	} Probably same star.
4840.....	
5132.....	Angle of position $160^{\circ}$ in error.
5235.....	} Probably same star.
5245.....	
5327.....	Angle of position $180^{\circ}$ in error.

In the Cape catalogue Sir John Herschel used "h" as the symbol for himself. I have adopted the same letter for him in the following catalogue. R. is used for myself, and H. for Mr. Hargrave.

A diagram of the positions of  $p$  Eridani is given, and another showing the Sydney observations of  $\alpha$  Centauri, also a number of smaller ones showing the interesting triple or multiple stars amongst those of the Cape catalogue which have been measured, and similar diagrams for some of the new ones.

The value of a revolution of the screw of each of the micrometers has been carefully determined in the usual way, *i.e.*, by separating the wires ten or more revolutions and observing the transits of circumpolar stars; that of the  $11\frac{1}{2}$ -inch is  $18\cdot006''$ , and that of the  $7\frac{1}{2}$ -inch is  $21\cdot670''$ .

It has been the custom always to make the measures with the star as close to the meridian as possible, and the star's hour angle at the time the observations were finished has been recorded in every case, and can be referred to if necessary. All the observations prior to July, 1874, were made with the  $7\frac{1}{2}$ -inch, and all the observations since that date which are marked H. have been made with the same instrument, and all those marked R. since the date given above were made with the  $11\frac{1}{2}$ -inch.

The date given in each of the catalogues is the date of the observation; to many of the new stars the date of discovery is added. A table showing the value of the decimal date is given at the end.

H. C. RUSSELL.

Sydney Observatory,  
24 March, 1882.

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SYDNEY OBSERVATORY.

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MEASURES

OF

HERSCHEL'S DOUBLE STARS

MADE WITH

THE SYDNEY REFRACTORS,

1882.

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## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's Initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
1	3	10	71	5442.....	R.	..	h. m. 0 2	78 12	60e	..	..	..
2	7	1	79	3349.....	..	H.	0 5	68 0	106 8	8	17.11	8
3	7	1	79	3350.....	..	H.	0 5	58 9	174 56	8	4.72	8
4	8	1	79	3352.....	..	H.	0 5	50 19	310 23	8	6.42	8
5	8	1	79	3354.....	..	H.	0 9	36 43	148 49	5	17.21	5
6	10	11	70	3358.....	R.	..	0 10	62 10	.....	..	..	..
	30	11	70	..	R.	..	..	..	..	..	..	..
	25	11	79	..	..	H.	..	..	..	..	..	..
7	14	12	80	3365.....	..	H.	0 20	51 27	170 45	6	15.98	6
8	10	10	71	3366.....	R.	..	0 22	68 24	.....	..	..	..
9	26	11	73	3370.....	R.	..	0 23	66 36	61 56	4	38.03	4
	1	12	79	..	..	H.	0 23	66 36	62 19	4	38.67	4
	2	12	79	..	..	H.	0 23	66 39	62 27	10	38.44	10
10	29	10	70	3373 after $\beta$ Toucani.	R.	..	0 26	63 40	169 57	7	27.51	7
11	1	11	70	3374.....	R.	..	0 27	75 57	117 17	10	31.97	10
12	27	11	79	3375.....	..	H.	0 28	35 42	165 59	10	5.16	10
13	12	11	73	3388.....	R.	..	0 37	54 47	238 9	6	16.89	6
14	24	11	70	3393.....	R.	..	0 38	75 10	.....	..	..	..
15	5	12	79	3395.....	..	H.	0 40	42 41	69 45	10	7.06	10
16	12	11	73	3397.....	R.	..	0 41	54 46	.....	..	..	..
17	2	12	79	3398.....	..	H.	0 41	52 45	126 24	10	27.20	10
18	5	12	79	3407.....	..	H.	0 48	70 16	80 12	10	20.72	10
19	24	11	70	3415.....	R.	..	0 58	41 18	.....	..	..	..
	28	2	72	..	R.	..	..	..	140e	..	1e	..
	24	11	75	..	R.	..	..	..	157e	..	1e	..
	20	11	77	..	R.	..	..	..	155e	..	1e	..
	13	1	82	..	..	H.	..	..	141 55	6	0.91	6
20	19	2	72	3416.....	R.	..	0 59	60 43	.....	..	1e	..
	2	12	79	..	..	H.	0 58	60 49	126 45	10	4.05	10
	29	5	80	..	R.	..	0 58	60 47	125 38	6	5.43	6
21	20	10	78	After 3419.....	R.	..	1 3	55 56	239 47	8	6.25	2
	8	10	79	..	..	H.	1 3	55 56	.....	..	..	..
	19	12	79	..	..	H.	1 3	55 56	245 44	10	5.81	10
22	8	12	79	3421.....	..	H.	1 8	51 23	62 27	10	45.90	10
23	24	11	70	3423 $\kappa$ Toucani.	R.	..	1 11	69 33	0 11	11	5.00	10
	25	11	72	..	R.	..	1 10	69 31	359 49	5	5.38	5
	5	12	79	..	..	H.	1 11	69 39	0 57	10	4.27	10
	29	5	80	..	R.	..	1 12	69 31	0 24	4	5.64	6
24	19	2	72	3435.....	R.	..	1 21	60 17	6e	..	..	..
24a	13	2	82	3447.....	..	H.	1 28	30 7	.....	..	..	..
25	15	12	73	3452.....	R.	..	1 34	54 4	108 9	6	11.10	6
26	2	12	70	After 3453 p Eridani.	R.	..	1 35	56 49	242 5	10	5.46	10
	1	3	78	..	R.	..	..	..	236 39	10	6.03	10
	4	3	78	..	R.	..	..	..	236 36	4	5.91	4
	20	3	78	..	R.	..	..	..	237 26	10	6.15	10
	20	10	78	..	R.	..	..	..	235 0	2	6.28	2
	8	12	79	..	..	H.	..	..	237 17	10	5.44	10
	12	6	80	..	R.	..	..	..	234 41	10	6.30	10
27	19	11	73	3464.....	R.	..	1 41	76 51	160 20	6	3.73	6
28	1	11	70	3475.....	R.	..	1 51	60 54	44 39	5	3.81	5
	26	11	70	..	R.	..	1 51	60 54	40 3	11	2.78	10
29	25	11	70	3488.....	R.	..	2 9	62 12	137 42	10	5.36	10
	8	12	79	..	..	H.	..	..	..	..	..	..
	29	12	79	..	..	H.	2 9	62 19	137 11	9	4.36	1
30	31	12	79	3494.....	..	H.	2 15	36 1	.....	..	..	..

measured at Sydney Observatory.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
1	....	9 14	.....	No. 7 or 8 magnitude star here; only 9 and 14; cannot measure it.
2	159	9 11	.....	
3	159	9 10	.....	
4	159	8 11	.....	
5	159	9 10	.....	Very indistinct.
6	....	9 9	.....	Not found.
	159	10 10	.....	Not found.
7	159	8 10	.....	Too ill-defined to measure.
8	150	7 14	.....	Cirrus stopped work.
				Looked carefully for companion; could not see it
9	140	9 10	.....	R. No. 3.
	159	8 9	.....	Large star double; night too bad to measure it.
	159	8 9	.....	Scud stopped observations.
10	....	4 4	.....	
11	100	9 10	.....	Cloudy for a time, cleared after. H.'s position, 112° 6; distance, 20''; magnitude, 9.11.
12	159	6 8	.....	Bad night.
13	....	7½ 8	.....	
14	....	11 12	.....	Not found.
15	159	8 9	.....	
16	....	7 15	.....	Companion not seen.
17	159	8 9	.....	
18	150	7 7½	.....	
19	320	7 8	.....	Found a star; could not divide it; definition good.
	320	....	.....	Divided easily with 320 power.
	400	8 9	.....	Seen double; not measured.
	200, 400	....	.....	Seen double; stars unsteady.
	....	....	.....	Night too bad to measure; seen with 150 power.
20	333	7 8	.....	Three stars of 7 magnitude in field of finder with this.
	159	8 8	.....	Found, not measured.
	....	8 8	.....	
21	333	3 7	Greenish yellow, copper red.	Position doubtful. H. says nothing about colour.
	159	....	.....	Seen, not measured.
	159	....	.....	
22	159	8 8	.....	
23	320	6 9	.....	H.'s second list, positions 17° 50 and 14° 20; distances 5.78 and 4.24; magnitudes, 5-11, 6-10.
	....	6 9	.....	Stars pretty steady; definition middling.
	159	6 9	.....	
	300	....	.....	A very fine object.
24	....	8 10	.....	Seen, not measured.
24a	333	....	.....	Not divided with 333 power.
25	....	8 9	.....	Ill-defined.
26	230	6 6	.....	Rapid motion.
	....	7 7	.....	
	175	....	.....	Aperture, 8 in. Clouds stopped observations.
	520	6 6½	.....	Aperture, 9 in. Stars ill-defined.
	....	7 7	Both yellow	Woodford.
	159	6 6	.....	
	....	....	.....	
27	....	8 10	.....	This is one of three stars forming a triangle.
28	320	7 7	.....	Very difficult; bad definition.
	320, 430	....	.....	Definition good.
29	....	....	.....	Pretty double. Herschel's position, 134° 56'; distances, 4.93" and 6.23"; magnitudes, 9-9; 2nd list.
	159	....	.....	Seen, not measured.
	159	8 8	.....	
30	159	9 9	.....	Seen elongated; no measure made.

## DOUBLE STARS observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's Initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
31	12	11	73	3499.....	R.	..	h. m.	° ' "	° ' "		"	
32	30	12	79	3520.....	..	H.	2 18	60 84	61 25	4	8.35	4
33	31	12	79	3525.....	..	H.	2 35	55 25	203 31	10	20.48	10
34	31	12	79	3527.....	..	H.	2 37	61 5	..	..	..	..
35	9	1	80	3529.....	..	H.	2 39	41 2	..	..	..	..
36	22	12	73	3530.....	R.	..	2 43	41 7	48 37	10	1.41	10
36	29	12	79	3532.....	..	H.	2 44	88 3	146 12	10	5.22	10
37	31	12	79	After 3532.....	..	H.	2 44	83 56	..	..	..	..
38	13	1	80	3539.....	..	H.	2 49	73 37	45e	..	6e	..
39	22	12	73	3545 $\phi$ Eridani	R.	..	2 54	40 47	82 18	5	8.19	5
39	30	12	73	3545 $\phi$ Eridani	R.	..	2 54	40 47	82 18	5	8.19	5
40	10	1	79	3549.....	..	H.	2 59	88 32	222 30	10	1.94	10
40	9	1	79	3549.....	..	H.	2 59	88 32	222 30	10	1.94	10
41	26	11	70	1st after 3549.....	R.	..	3 1	51 49	69 15	10	38.05	10
42	30	12	79	3556.....	R.	..	3 1	51 58	69 40	10	39.01	10
42	16	1	72	3556.....	R.	..	3 8	44 52	230e	..	14e	..
43	15	1	79	3556.....	..	H.	3 8	44 58	204 8	10	2.12	10
43	13	1	79	After 3556.....	..	H.	3 9	64 22	39 55	10	44.27	10
44	2	1	80	3562.....	..	H.	3 10	64 49	330 26	10	34.22	10
45	28	11	70	After 3567.....	R.	..	3 13	64 55	102 38	10	19.35	10
46	18	1	79	3568.....	..	H.	3 14	64 53	101 0	10	19.39	10
46	16	1	80	3568.....	..	H.	3 13	64 54	104 42	10	19.11	10
46	29	11	70	3568.....	R.	..	3 12	79 28	225 56	10	15.15	10
47	10	1	71	3570.....	R.	..	..	..	225 55	10	15.21	10
47	31	12	79	3570.....	..	H.	..	..	224 19	10	15.15	10
48	14	1	79	3576.....	..	H.	3 21	46 2	340 24	10	3.03	10
48	3	12	75	3577.....	R.	..	3 19	82 16	..	..	..	..
49	3	12	75	3581.....	R.	..	3 26	80 55	331 59	10	5e	..
50	22	12	73	3582.....	R.	..	3 26	83 58	..	..	..	..
51	30	12	79	1st after 3586.....	..	H.	3 35	40 52	324 43	10	7.43	10
51	13	1	80	3586.....	..	H.	..	..	326 24	10	6.65	10
52	29	12	79	2nd after 3586.....	..	H.	3 36	60 15	270 0	10	57.79	10
53	2	1	80	3590.....	..	H.	3 41	42 16	..	..	..	..
54	2	1	74	3591.....	R.	..	3 41	51 41	..	..	..	..
55	18	12	72	3592.....	R.	..	3 40	54 43	17 11	10	5.72	10
56	14	1	79	3597 $\phi$ Eridani.....	..	H.	3 44	37 59	205 10	10	7.00	10
57	2	1	74	3598.....	R.	..	3 45	50 49	229 45	4	14.22	4
58	6	1	71	3600.....	R.	..	3 46	64 19	15 19	10	23.12	10
59	20	1	80	3600.....	..	H.	3 45	64 33	14 59	10	22.00	10
59	6	1	71	3603.....	R.	..	3 45	71 22	79 20	10	19.37	10
60	2	1	80	3605.....	..	H.	..	..	81 22	10	19.58	10
60	15	1	79	3605.....	..	H.	3 45	80 35	161 27	10	20.07	10
61	17	1	79	3606.....	..	H.	3 49	71 9	339 22	2	20.03	3
62	28	2	81	3607.....	..	H.	3 46	81 13	124 5	6	36.99	6
63	23	1	79	3609.....	..	H.	3 51	63 0	..	..	..	..
64	23	1	79	3610.....	..	H.	3 52	62 59	..	..	..	..
65	23	1	79	3611.....	..	H.	3 52	40 16	139 4	10	3.90	10
66	17	1	79	3612.....	..	H.	3 50	80 23	153 39	10	20.23	10
67	23	1	79	3613.....	..	H.	..	..	161 13	10	20.35	10
67	23	1	79	3613.....	..	H.	3 53	49 50	320 0	10	9.73	10
68	23	1	79	3620.....	..	H.	4 0	44 47	354 1	4	79.96	4
69	23	1	79	3622.....	..	H.	4 0	36 10	109 54	10	10.69	10
70	11	1	71	3624.....	R.	..	4 1	75 5	..	..	..	..
71	2	3	81	3625.....	..	H.	..	..	25 46	6	19.74	6
71	2	3	81	3625.....	..	H.	4 6	52 13	130 32	6	11.46	6
72	29	1	79	3627.....	..	H.	4 8	34 4	297 51	10	23.15	10

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
31	....	10 11	.....	Another pair precedes this 15 seconds only. R. No. 16.
32	150	8 9	.....	
33	150	7 7	.....	7-magnitude star seen; no companion.
34	150	7 7	.....	Seen, not measured.
	150	7 7	.....	
35	....	8 12	.....	Neither of the companions seen; 11-magnitude star follows about 10 seconds.
36	150	6 8	.....	
37	150	6 8	.....	6-magnitude star here; no companion.
	150	6 8	.....	6-magnitude star here; no companion.
38	....	10 11	.....	Estimated position and distance.
39	....	5 6	Straw-yellow	Definition middling; hazy, thick night.
	150	....	.....	
40	150	....	.....	
41	....	7 8	.....	Herschel's 2nd list. Position, 70°42'; distance, 87'31'; magnitudes, 7-8; no change.
	150	7 9	.....	
42	....	....	.....	Seen; bad definition; no measures.
	150	6 11	.....	
43	150	6 11	.....	
44	150	8 8	.....	
45	....	7 9	Yellow	Definition good; large star yellow. Herschel's position, 101°49'; distance, 18'00''; magnitudes, 7-9.
	150	7 9	.....	
	150	7 9	.....	
46	....	7 9	Yellow	Herschel's large list. Position, 224°8'; distance, none given; magnitudes, 7-9.
	150	7 9	.....	White haze about; small star precedes.
	150	6 8	.....	
47	150	7 9	.....	
48	....	8 12	.....	Companion not seen; night good.
49	....	11 12	.....	Distance estimated. This double is the northern corner of a trapezium.
50	....	7 11	.....	Seen, but clouds prevented measures.
51	150	8 8½	.....	
	150	8 8½	.....	
52	150	7 8	.....	
53	150	....	.....	Not found.
54	....	10 13	.....	Seen, too faint to measure.
55	....	6 10	Straw-yellow, sky blue.	Definition bad.
56	150	6 7	.....	
57	....	10 11	.....	Faint and difficult; verified.
58	....	9 10	.....	Well defined.
	150	9 10	.....	
59	....	9 10	.....	Magnitudes seem too small.
	150	9 10	.....	
60	150	9 10	.....	
61	150	9 10	.....	Very faint.
62	150	9 10	.....	
63	150	11 11	.....	Seen, too faint to measure.
64	150	10 12	.....	Seen, too faint to measure.
65	150	9 9	.....	
66	150	8 9	.....	Small star, very indistinct.
	150	....	.....	
67	150	10 10	.....	
68	150	7 8	.....	
69	150	9 9	.....	
70	....	10 11	.....	Bad definition; seen but not measured
	150	9 10	.....	
71	150	10 10	.....	
72	150	8 10	.....	

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
73	13	1	80	3628.....	R.	H.	h. m. 4 8	36 35	49 26	10	49.56	10
74	16	1	71	3631.....	R.	H.	4 9	09 16	225 52	10	6.44	10
75	29	1	79	".....	R.	H.	"	"	225 36	10	7.08	10
76	20	1	80	3634.....	R.	H.	4 11	44 58	340 57	10	10.70	10
76	2	1	74	3641.....	R.	H.	4 15	62 29	270 4	6	8.39	6
77	3	2	79	".....	R.	H.	"	"	268 59	10	7.82	10
78	3	2	79	3642.....	R.	H.	4 16	34 9	157 25	10	6.39	10
78	3	2	79	3643.....	R.	H.	4 16	44 33	114 6	4	70.84	4
79	30	12	73	3644 $\theta$ Reticuli.....	R.	H.	4 19	63 32	6 20	4	5.20	4
80	4	2	80	3648.....	R.	H.	4 20	43 53	"	"	"	"
81	29	1	79	3650.....	R.	H.	4 22	40 46	181 59	10	3.20	10
82	15	12	73	After 3650.....	R.	H.	4 23	57 30	233 8	6	6.92	6
83	30	12	73	3651.....	R.	H.	4 25	64 27	"	"	"	"
84	30	12	73	3655.....	R.	H.	4 62	64 21	62 15	10	16.95	10
85	5	2	80	3656.....	R.	H.	4 23	44 39	72 5	10	17.16	10
86	6	4	81	3657.....	R.	H.	4 24	66 29	339 8	6	7.24	6
87	23	1	80	3662.....	R.	H.	4 28	66 5	60 16	10	18.92	10
88	30	12	73	3665.....	R.	H.	4 32	60 5	40e	"	6e	"
89	16	1	72	3670.....	R.	H.	4 32	63 6	99 18	4	33.00	4
90	29	1	80	".....	R.	H.	"	"	98 52	10	31.83	10
91	4	2	79	3671.....	R.	H.	4 35	50 22	279 49	10	6.26	10
92	4	2	79	3673.....	R.	H.	4 35	77 55	64 24	10	10.18	10
93	4	2	79	3678.....	R.	H.	4 37	45 14	"	"	"	"
93a	21	2	82	3679.....	R.	H.	4 37	62 30	"	"	"	"
94	5	2	79	3680.....	R.	H.	4 37	52 10	26 38	6	8.23	6
94	5	2	79	3683.....	R.	H.	4 40	59 9	79 6	6	3.46	6
95	29	1	80	3691.....	R.	H.	"	"	80 36	10	8.32	10
95a	21	2	82	3694.....	R.	H.	4 39	77 10	42 1	10	36.49	10
96	18	1	73	3696.....	R.	H.	4 46	45 18	65 11	6	8.21	6
97	30	3	81	3697.....	R.	H.	4 44	56 14	273 44	6	3.62	6
98	24	12	72	3702 $\epsilon$ Pictoris.....	R.	H.	4 47	41 30	281 34	6	12.13	6
99	3	2	80	".....	R.	H.	4 48	53 37	56 1	6	11.85	5
100	4	2	80	3715.....	R.	H.	"	"	58 2	10	11.92	10
101	80	3	81	3717.....	R.	H.	4 56	49 42	110 17	10	9.14	10
102	11	2	80	3719.....	R.	H.	4 58	39 46	198 14	6	10.08	6
103	17	2	79	3721.....	R.	H.	5 0	67 26	"	"	"	"
104	4	4	81	3726.....	R.	H.	5 1	80 51	221 38	10	2.55	10
104	17	2	79	3728.....	R.	H.	5 3	45 50	61 27	6	14.95	6
105	4	4	81	".....	R.	H.	5 5	41 23	259 31	10	10.29	10
106	17	2	79	3729.....	R.	H.	"	"	258 33	6	8.80	6
106a	3	2	80	3733.....	R.	H.	5 5	45 0	229 57	10	10.24	10
106a	20	2	82	3734.....	R.	H.	5 8	79 33	"	"	"	"
107	19	10	78	Rigel's companion.....	R.	H.	5 8	42 56	196 16	6	10.40	6
				".....	R.	H.	5 9	8 21	46e	"	0.25e	"
	20	10	78	".....	R.	H.	5 9	8 21	{ 64e 199e	"	"	"
108	5	2	80	3738.....	R.	H.	5 10	55 27	"	"	"	"
109	27	1	73	3739.....	R.	H.	5 11	48 1	103 53	6	3.94	6
110	11	2	80	3740.....	R.	H.	5 11	36 51	286 6	10	23.45	10
111	19	2	79	3743.....	R.	H.	5 13	60 7	"	"	"	"
111a	5	2	80	".....	R.	H.	"	"	129 1	10	4.42	10
112	20	2	82	3745.....	R.	H.	5 14	54 6	171 57	6	12.69	6
113	18	12	72	3746.....	R.	H.	5 12	72 12	263 29	4	4.88	4
113	18	1	73	3748.....	R.	H.	5 15	62 33	"	"	"	"
114	6	4	81	3756.....	R.	H.	5 17	53 52	165 43	6	17.37	6
115	6	4	81	3760.....	R.	H.	5 22	35 25	223 40	6	7.04	6
116	7	1	78	3761 $\beta$ Leporis.....	R.	H.	5 23	20 51	282 56	8	2.42	8
	8	1	78	".....	R.	H.	5 23	20 51	282 26	2	2.56	2
	26	2	78	".....	R.	H.	5 23	20 51	282 32	10	2.74	10

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
73	159	7 7½	.....	
74	.....	9½ 9½	.....	
75	159	9 9	.....	
76	159	6 11	Straw colour .....	Large star, straw colour; both bright clean stars. Same as H. 3748, R.A. of which is 1 hr. too much
77	159	7 10	.....	
78	159	5 8	.....	
79	.....	6 9	.....	The pair form the preceding corner of a triangle. Not seen.
80	159	.....	.....	
81	159	6 9	.....	
82	.....	8 8½	.....	Both yellow.
83	.....	9 10	.....	Seen; not measured.
84	159	9 10	.....	
85	.....	8 13	.....	Seen in field with 3651.
86	159	9 10	.....	
87	159	10 11	.....	
88	159	8 9	.....	
89	.....	10 10	.....	Nice double; magnitudes, doubtful, owing to haze. Definition bad; thin hazy clouds.
90	159	6 8	Uncertain .....	Thin clouds about.
91	159	6 9	.....	Very faint.
92	159	11 12	.....	
93	159	8 8	.....	
94	159	8 10	.....	Not found.
95	159	7	Red .....	Large red star seen; no companion.
96	159	10 10	.....	
97	.....	7 7	.....	
98	159	.....	.....	
99	159	9 9	.....	
100	159	8 10	.....	Small star blue.
101	159	8 10	.....	Air clear, passing clouds.
102	.....	9½ 10½	.....	
103	435	6 14	.....	
104	.....	5½ 6	Both straw yellow ..	Stars steady.
105	159	6 7	.....	Cloudy.
106	159	8 9	.....	Looked for 3713; could not find it.
107	159	10 11	.....	
108	.....	10 11	.....	Not found.
109	159	8 9	.....	
110	159	10 10	.....	
111	159	5 9	.....	
112	159	6 11	.....	
113	159	10 10	.....	Seen; not measured.
114	159	9 9	.....	Very difficult.
115	159	10 10	.....	When best defined clearly divided; distance not more than ¼"; companion of Rigel. See diagram.
116	600 & 800	9 9	.....	
117	400, 435, 800.	.....	.....	
118	159	11 11	.....	Seen; not measured.
119	.....	9 9	.....	Very neat; clouds about.
120	.....	7 8	.....	
121	159	.....	.....	Seen; cloudy.
122	159	9 10	.....	
123	159	9 11	.....	
124	159	8 8	.....	Bad definition.
125	159	9 11	.....	This star is 3641; near α Reticuli.
126	159	9 11	.....	
127	159	6 6½	.....	No 11 magnitude star seen; unsteady definition.
128	800	4 11	.....	This is Burnham's companion. See diagram.
129	.....	.....	.....	Very unsteady; small star; only seen in glimpses.
130	800	8½ 13	.....	Herschel's companion; seen with 150 power.



## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 18th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
	28	2	78	3761 $\beta$ Leporis.....	R.	..	h. m.	..	..	..	..	..
	4	3	78	After 3761.....	R.	..	5 23	20 51	286 49	3	2-72	7
117	11	1	71	After 3761.....	R.	..	5 23	20 51	283 21	10	2-73	19
	29	1	80	After 3761.....	R.	..	5 22	52 26	106 10	6	38-59	5
118	24	2	79	After 3763.....	H.	H.	..	..	106 45	10	38-64	19
119	8	2	80	3767.....	H.	H.	5 23	43 27	251 41	10	11-84	10
120	24	12	72	3773.....	R.	..	5 27	42 33	169 47	3	6-48	10
121	6	2	72	3777.....	R.	..	5 27	32 25	276 56	3	18-61	3
122	2	1	74	3783.....	R.	..	5 31	54 59	848 20	2	52-26	2
123	21	2	79	3784.....	R.	..	5 35	71 0	258 32	4	15-56	4
124	12	2	73	3789.....	R.	..	5 35	46 9	58 38	10	4-65	10
125	6	2	72	3790.....	R.	..	5 35	50 18	358 1	4	9-14	4
126	2	2	79	3793.....	R.	..	5 37	66 58	..	..	..	..
127	23	2	80	3797.....	R.	..	5 39	48 18	110 10	10	11-42	10
128	24	1	73	3802.....	R.	..	5 41	46 25	174 48	10	50-01	10
129	30	3	81	3803.....	R.	..	5 42	55 52	308 28	4	6-98	4
130	8	4	81	3805.....	H.	H.	5 43	44 51	113 35	6	17-67	6
131	8	4	81	3806.....	H.	H.	5 46	43 32	118 44	6	5-57	6
132	30	1	73	3812.....	H.	H.	5 47	39 28	114 44	6	11-81	6
133	23	2	80	3814.....	R.	..	5 49	59 53	190 20	6	2-43	6
134	27	2	79	3816.....	H.	H.	5 46	74 59	173 39	10	3-21	10
135	6	2	72	3820.....	R.	..	5 50	47 59	230e	..	..	..
135a	13	3	82	3822.....	R.	..	5 52	69 56	94 45	6	27-00	6
136	18	1	73	3824.....	R.	..	5 54	53 21	304 57	6	55-84	6
136a	2	3	82	3827.....	R.	..	5 56	50 23	240e	..	3e	..
137	27	2	79	3828.....	H.	H.	5 58	41 7	243 14	6	23-17	6
138	10	3	79	3831.....	H.	H.	5 58	53 55	125 15	10	14-15	10
139	14	2	73	After 3834.....	R.	..	6 0	41 9	134 19	10	2-56	10
140	24	1	73	3835.....	R.	..	6 1	45 5	230 35	6	3-04	6
	9	3	82	3836.....	R.	..	6 1	48 25	2 6	6	3-90	6
141	8	4	81	3836.....	R.	..	..	..	11 39	10	2-35	10
142	27	2	74	3837.....	H.	H.	6 4	49 52	302 11	6	9-06	6
143	29	1	72	3843.....	R.	..	6 4	55 57	..	..	..	..
144	19	2	74	3846.....	R.	..	6 10	60 20	326 25	6	11-20	6
145	23	2	80	3847.....	R.	..	..	..	326 34	4	11-59	4
	12	1	71	After 3847.....	R.	..	6 12	49 8	..	..	..	..
	29	1	72	..	R.	..	6 14	65 23	115 24	10	21-13	10
146	11	3	79	..	R.	..	..	..	116 5	6	20-59	6
	29	1	73	3848.....	H.	H.	..	..	116 47	10	20-52	10
	6	3	79	..	R.	..	6 14	47 4	139 8	4	5-72	4
147	13	3	79	3849.....	H.	H.	6 14	47 4	138 3	10	6-60	10
148	19	2	74	3851.....	H.	H.	6 16	39 20	51 53	10	39-53	10
149	12	3	79	3852.....	R.	..	6 17	61 34	..	..	..	..
150	17	3	80	3854.....	H.	H.	6 17	44 44	..	..	..	..
151	17	2	73	3855.....	H.	H.	6 18	54 27	..	..	..	..
152	16	3	80	3856.....	R.	..	6 14	74 23	79 54	5	8-98	5
153	11	3	79	3857.....	H.	H.	6 20	45 40	2 2	10	40-52	10
154	6	3	73	3860.....	H.	H.	6 22	40 54	226 53	10	7-86	10
155	19	2	74	3861.....	R.	..	6 20	36 39	260e	..	..	..
156	17	3	79	3870.....	H.	H.	6 23	58 7	62 32	4	3-21	4
157	8	3	80	3872.....	H.	H.	6 28	75 8	..	..	..	..
158	15	3	80	3873.....	H.	H.	6 30	79 55	..	..	..	..
159	12	3	79	3874.....	H.	H.	6 30	57 31	..	..	..	..
160	6	3	79	3879.....	H.	H.	6 31	58 39	..	..	..	..
161	29	1	72	3883.....	R.	..	6 33	70 32	89 40	10	12-48	10
162	14	3	72	3884.....	R.	..	6 35	48 10	319 13	6	12-99	6
	27	2	74	..	R.	..	6 35	55 15	..	..	..	..
	24	2	76	..	R.	..	..	..	..	..	..	..
	10	3	79	..	R.	..	..	..	..	..	..	..
163	10	3	79	After 3884.....	H.	H.	6 38	88 17	277 49	10	8-08	10
164	7	2	72	3888.....	R.	..	6 36	78 49	114 4	2	36-02	2
165	28	12	75	Sirius.....	R.	..	6 40	16 33	54 53	5	11-71	5

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
	800	9 9	.....	Aperture 7 in. Observer's feet south instead of north.
	800	.....	.....	Aperture 8 in. ; definition fair.
117	.....	8 8	.....	Definition bad ; thin clouds.
	150	7 7	.....	
118	150	9 10	.....	
119	150	8 8½	.....	
120	.....	9½ 10	Blue .....	Small star, very faint.
121	150	6 9	.....	
122	.....	9 11	.....	Difficult, owing to white haze.
123	150	7 10	.....	
124	.....	9 9½	.....	Very little difference in magnitude.
125	.....	.....	.....	Not found.
126	150	7 11	.....	
127	150	8 9	.....	Very bad night.
128	.....	9 11	.....	Very faint.
129	150	7 9	.....	
130	150	10 11	.....	
131	150	11 11	.....	
132	.....	9½ 9½	.....	Definition good at times, then bad again.
133	150	10 10	.....	Clouds about.
134	150	6 12	.....	Seen ; won't bear light to measure.
135	150	7 12	.....	Stars pretty steady ; definition moderate.
135a	150	6 7	.....	h.'s small star not seen.
136	.....	6 9	.....	Seen, but ill-defined ; no measures taken.
136a	150	9 9	.....	
137	150	9 10	.....	
138	150	9 9	.....	
139	150	6 10	Both yellow .....	Very bad definition.
140	.....	7 7	.....	
	800	7 7	.....	Beautiful pair ; h's angle 343-5°.
141	150	10 10	.....	
142	.....	.....	.....	Not found ; definition fair.
143	150	9 9½	.....	
	.....	10 10½	.....	
144	150	9 10	.....	Seen ; not measured.
145	.....	6 8	.....	
	150	7 8	.....	
	150	7 9	.....	
146	.....	10 10	.....	Definition bad ; hazy.
	150	10 10	.....	
147	150	7 9	.....	
148	.....	.....	.....	Not found.
149	150	9 11	.....	Seen ; not measured.
150	150	9 12	.....	Seen ; not measured.
151	.....	10 10½	.....	Nearly alike ; definition middling.
152	150	7 11	.....	
153	150	7 12	.....	Seen ; won't bear light.
154	150	7 10	.....	
155	.....	9 9	.....	
156	150	.....	.....	Not found.
157	150	.....	.....	Not found.
158	150	9 11	.....	Seen ; not measured.
159	150	6 12	.....	Seen ; not measured.
160	150	10 10	.....	
161	150	6½ 9	Yellow, pale blue ..	
162	.....	7 12	.....	Small star not seen ; another red star follows.
	.....	.....	Red .....	Red star carefully examined ; no companion seen.
120,200	7	.....	Red .....	Red star seen ; no companion found ; 10 in. aperture.
	.....	.....	.....	Not found.
163	150	7 9	.....	
164	.....	7 12	Yellow .....	
165	400	1 10	.....	Definition good.

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
	17	2	76	Sirius .....	R.	..	h. m. 6 40	16 33'	54 47	7	11.54	7
	7	3	76	" .....	R.	..	"	"	55 14	6	10.37	6
	5	4	76	" .....	R.	..	"	"	55 5	6	12.58	6
	2	1	80	" .....	R.	..	"	"	48 47	10	10.55	10
	9	1	80	" .....	R.	..	"	"	.....	..	.....	..
166	12	3	79	3889 .....	..	H.	6 40	50 20	266 10	10	43.80	10
167	20	1	73	3892 .....	R.	..	6 40	81 0	.....	..	.....	..
	13	3	79	" .....	..	H.	..	..	.....	..	.....	..
	8	3	80	" .....	..	H.	6 38	81 7	35 32	10	28.41	10
168	19	3	79	3894 .....	..	H.	6 48	65 24	238 30	10	27.19	10
169	29	1	72	3895 .....	R.	..	6 43	47 40	.....	..	.....	..
	17	3	79	" .....	..	H.	6 43	47 40	60e	..	.....	..
170	6	3	73	3898 .....	R.	..	6 49	56 3	128 47	6	16.90	6
171	24	3	79	3900 .....	..	H.	6 49	84 4	284 6	10	2.23	10
172	27	2	74	3906 .....	R.	..	6 54	55 26	223 15	4	19.39	4
173	20	4	81	3909 .....	..	H.	6 55	47 15	276 47	6	7.96	6
174	25	3	79	3911 .....	..	H.	6 54	76 42	43 45	10	21.39	10
175	19	3	80	3919 .....	..	H.	6 59	35 11	257 26	10	10.40	10
176	20	1	78	3920 .....	R.	..	6 58	48 56	108 5	6	5.54	6
177	15	3	80	3924 .....	..	H.	6 59	60 44	356 51	10	15.17	10
178	8	3	80	3927 .....	..	H.	6 58	74 15	17 37	10	14.58	10
									156 19	10	3.25	10
179	12	3	79	3928 .....	..	H.	7 1	34 36	286 27	2	34.43	2
									119 24	2	35.45	2
180	13	4	81	3929 .....	..	H.	6 59	71 52	288 17	6	8.28	6
181	6	2	72	After 3930 .....	R.	..	7 1	59 3	57 5	6	2.82	6
182	7	3	80	3931 .....	..	H.	7 2	42 17	40 38	10	73.85	10
183	25	3	79	3932 .....	..	H.	7 1	77 36	282 5	6	8.26	6
	15	3	80	" .....	..	H.	.....	.....	282 55	10	7.67	10
184	20	4	81	3935 .....	..	H.	7 6	49 48	99 3	6	26.07	6
185	16	3	80	After 3936 .....	..	H.	7 7	60 37	26 43	10	4.68	10
186	7	2	72	After 3940 .....	R.	..	7 8	55 22	44 18	8	7.13	7
	24	1	73	" .....	R.	..	.....	.....	45 14	6	6.94	6
	17	3	79	" .....	..	H.	.....	.....	45 50	10	6.93	10
187	7	2	72	3941 .....	R.	..	7 8	60 11	.....	..	.....	..
	2	3	78	" .....	R.	..	.....	.....	298 54	10	1.36	10
	17	3	79	" .....	..	H.	.....	.....	270e	..	.....	..
	2	4	79	" .....	..	H.	.....	.....	.....	..	.....	..
	17	3	80	" .....	..	H.	.....	.....	307 13	4	0.72	10
188	20	4	81	3942 .....	..	H.	7 9	33 27	38 22	6	6.98	6
189	17	3	79	3945 .....	..	H.	7 10	70 17	300 0	10	13.83	10
	8	3	80	" .....	..	H.	.....	.....	299 31	10	12.89	10
190	4	4	81	3947 .....	..	H.	7 13	46 2	267 18	6	6.98	6
191	5	4	81	3951 .....	..	H.	7 14	50 48	73 47	6	7.17	6
192	22	4	81	3955 .....	..	H.	7 15	65 58	32 12	6	25.68	6
193	5	4	81	3956 .....	..	H.	7 18	48 17	163 32	6	7.31	6
194	1	4	79	3957 .....	..	H.	7 18	35 40	196 10	10	6.89	10
195	12	3	73	After 3959 .....	R.	..	7 17	52 3	16 20	5	9.90	5
196	1	4	79	3960 .....	..	H.	7 18	48 18	156 35	10	22.75	10
197	19	2	74	3962 .....	R.	..	7 19	56 32	103 10	4	9.27	4
198	21	3	79	3966 .....	..	H.	7 21	87 2	141 38	10	6.67	10

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
	280	1 9	.....	Clark's companion.
	200	....	.....	Aperture, 8 inches; small star appears a hard disc outside the rays of Sirius.
	180	....	.....	9 inches aperture; definition splendid, but getting bad towards last measures.
	250	....	.....	Clark's companion brighter than distant one, and clear of rays from Sirius: Sirius diameter about $\frac{1}{4}$ of the distance of star.
	....	....	.....	Examined Sirius, definition fair; distant companion easy, but Clark's companion is very difficult, and looks much smaller than it did on January 1st, and is now in the rays from the large star.
166	159	7 9	.....	
167	....	9 9	.....	Seen; no change apparent; not measured.
	159	....	.....	Not found; haze came over.
	159	9 9	.....	Bright wires.
168	159	8 11	.....	
169	....	....	.....	Not found.
	159	8 13	.....	Seen; won't bear light.
170	150	9 9	.....	10 magnitude star south following.
171	159	6 11	.....	
172	....	9 $\frac{1}{2}$ 10	.....	
173	159	9 11	.....	
174	159	7 11	.....	
175	159	8 9	.....	
176	....	9 9	Both bluish	Pretty; well defined.
177	159	10 11	.....	
178	159	9 9	.....	
179	159	{ 5 7 5 12 5 15	.....	} Quadruple. See diagram.
180	159	8 11	.....	
181	....	6 $\frac{1}{2}$ 7	.....	
182	159	7 8	.....	
183	159	8 11	.....	
	159	8 10	.....	
184	159	9 10	.....	
185	159	10 10	.....	
186	....	8 8	Both very light yellow	Stars very steady; definition middling.
	....	8 8	Both yellow	12 magnitude star south following.
	159	8 8	.....	
187	150	9 9 $\frac{1}{2}$	.....	Seen in glimpses with 150; southerly wind spoiled definition.
	260	9 9 $\frac{1}{2}$	.....	Aperture, 8 inches; definition, bad; observations, middling and very difficult; double forms north angle of triangle.
	159	....	.....	Seen; elongated.
	159	....	.....	Seen.
	833	8 8 $\frac{1}{2}$	.....	
188	159	11 11	.....	
189	159	5 8	.....	
	159	4 6	.....	
190	159	8 10	10 m. blue	
191	159	9 10	.....	
192	159	9 10	.....	
193	159	9 10	.....	
194	159	8 9	.....	
195	150	7 7 $\frac{1}{2}$	Both yellow	Coarse double, about 12 magnitude north following, to which it points.
196	159	7 9	.....	
197	....	8 8 $\frac{1}{2}$	.....	H. magnitudes 8-10, now 8-8 $\frac{1}{2}$ .
198	159	7 8	.....	

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's Initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
199	3	4	79	3969.....	..	H.	h. m. 7 23	° ' 34 4	225 52	10	15.95	10
200	6	3	73	3972.....	R.	..	7 23	62 13	44 49	2	20.00	2
201	4	4	79	After 3972.....	..	H.	7 24	43 3	74 23	10	22.08	10
202	21	3	72	3974.....	R.	..	7 27	55 6	241 39	5	5.49	5
203	16	3	80	3975.....	..	H.	7 24	81 28	333 53	10	10.14	10
204	22	4	81	3977.....	..	H.	7 27	61 18	70e	..	12e	..
205	14	2	73	3979.....	R.	..	7 29	36 10	.....	..	..	..
	6	4	81	.....	..	H.	.....	69 7	6	7.55	6	
206	20	2	74	3985.....	R.	..	7 29	67 53	87 16	4	3.99	4
	3	4	79	.....	..	H.	.....	85 45	10	2.82	10	
207	24	3	79	3988.....	..	H.	7 33	48 34	302 26	6	16.33	6
208	21	3	72	3997.....	R.	..	7 38	74 0	105 43	6	2.27	6
	24	3	79	.....	..	H.	.....	.....	105 27	10	1.91	10
209	14	2	73	4000.....	R.	..	7 40	58 23	.....	..	..	..
	24	3	79	.....	..	H.	.....	.....	.....	..	..	..
	15	3	80	.....	..	H.	.....	.....	.....	..	..	..
	8	4	80	.....	..	H.	.....	.....	.....	..	..	..
210	2	4	79	After 4001.....	..	H.	7 40	50 10	133 38	10	52.14	10
211	14	2	73	4009.....	R.	..	7 43	72 23	114 11	6	16.53	6
	15	4	79	.....	..	H.	.....	.....	115 27	10	17.42	10
212	16	4	79	4011.....	..	H.	7 46	66 46	302 49	10	15.95	10
213	1	4	79	4014.....	..	H.	7 48	63 22	154 29	10	10.61	10
214	16	3	80	4016.....	..	H.	7 48	51 9	169 18	10	16.38	10
215	7	3	72	4018.....	R.	..	7 49	59 20	327 3	4	..	..
	10	6	80	.....	..	H.	.....	.....	327 20	4	4.62	4
216	12	3	73	4023.....	R.	..	7 52	70 27	.....	..	..	..
				.....	..	H.	7 55	48 54	{ 69 53	6	5.32	6
217	10	6	80	4025.....	..	H.	7 55	48 54	{ 37 40	4	39.22	4
				.....	..	H.	7 54	60 30	{ 114 33	4	9.50	4
218	7	3	72	4027.....	R.	..	7 54	60 30	{ 283 34	2	29.12	2
				.....	..	H.	7 56	49 38	{ 277 38	2	46.44	2
219	28	3	79	4028.....	..	H.	7 56	49 38	46 11	10	16.12	10
220	15	4	79	4030.....	..	H.	7 57	40 57	346 9	10	27.22	10
221	7	3	72	4031.....	R.	..	7 56	60 31	356 7	4	6.11	4
	12	3	73	.....	R.	..	.....	.....	355 6	6	6.13	6
222	28	3	79	4033.....	..	H.	7 57	47 28	66 22	10	11.64	10
223	8	4	80	4034.....	..	H.	7 58	42 36	295 13	10	5.33	10
224	18	4	79	4038.....	..	H.	7 58	41 5	346 17	10	27.59	10
225	16	4	79	4040.....	..	H.	7 59	36 5	135 18	10	19.58	10
226	4	4	79	4043.....	..	H.	8 0	46 13	213 19	10	18.81	10
227	15	4	79	4048.....	..	H.	8 5	41 50	206 43	10	6.93	10
228	18	4	79	1st after 4049.....	..	H.	8 6	42 16	80 27	10	5.38	10
229	6	3	73	2nd after 4049.....	R.	..	8 6	46 57	.....	..	..	..
	15	4	79	.....	..	H.	8 6	46 57	220 25	10	41.41	10
230	8	3	72	4053.....	R.	..	8 4	60 45	130e	..	..	..
231	8	3	72	4055.....	R.	..	8 4	69 33	.....	..	7e	..
	24	1	73	.....	R.	..	8 6	69 35	7 20	5	6.15	5
232	21	4	79	4056.....	..	H.	8 7	67 9	.....	..	..	..
233	23	3	72	After 4058 = Volantis.....	R.	..	8 8	68 16	23 4	6	6.52	6
234	3	3	72	4060.....	R.	..	8 9	36 4	180e	..	20e	..
235	3	4	79	4063.....	..	H.	8 10	36 58	349 42	10	18.18	10
236	9	5	81	4065.....	..	H.	8 10	53 41	226 10	6	9.24	6
237	23	3	72	4067.....	R.	..	8 7	33 22	.....	..	..	..
238	17	5	81	4069.....	..	H.	8 11	45 25	253 44	6	32.33	6
239	9	5	81	4071.....	..	H.	8 10	64 8	204 9	6	6.83	6
240	2	3	78	4073.....	R.	..	8 14	36 59	276 52	6	2.31	6

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
199	159	8 9	.....	
200	....	10½ 12	.....	Smaller star seen in glimpses; no third star seen; very faint—can it be variable?
201	159	5 11	.....	
202	150	9 11	Both white.....	
203	159	10 11	.....	
204	159	9 13	.....	Too faint to measure Herschel's magnitudes, 8-9.
205	150	.....	.....	Not found.
	159	10 10	.....	
206	....	10 10	.....	Too cloudy to see if another pair here.
	159	10 11	.....	
207	159	9 11	.....	Ill-defined.
208	230	7 7	Whitish yellow.....	Observations moderately good; definition good, but a difficult object.
	159	7 7	.....	
209	230	6 11	.....	Companion seen in glimpses; definition too bad for measures.
	159	....	.....	Not found.
	159	....	.....	Not seen.
	159	....	.....	Seen; no measures taken, wind shaking the telescope.
210	159	7 8	.....	
211	150	5 10	Yellow and bluish....	Definition bad.
	159	5 9	.....	
212	159	9 9½	.....	
213	159	8 9	.....	
214	159	10 10½	.....	
215	....	8 9	Faint yellow.....	Miniature of $\alpha$ Crucis.
	159	9 10	.....	
216	....	9 10	.....	Seen; no change apparent; definition bad; not mea- sured.
217	159	5 11 11	.....	Triple. See diagram.
	....	9 9	.....	
218	....	9 11	.....	In a cluster with 4031 quadruple. See diagram.
	159	8 8	.....	
219	159	8 10	White and red.	
220	159	7½ 8	Both white.....	One of a fine cluster of about 100; several are coloured stars.
	....	8 9	.....	
222	159	8 9	.....	
223	159	9 10	.....	
224	159	6 8	Red.....	Small star, red; probably 4030.
225	159	9 10	.....	
226	159	9 9½	.....	
227	159	10 10	.....	
228	159	7 8	.....	
229	....	3 6	.....	Herschel's 3rd star 13m. not seen; see diagram; 10 and 10 seen, beautiful object.
	159	3 6	.....	11 and 11 m. stars, position 150e, seen as well.
230	....	8 10	.....	Triple.
231	....	9 9	Yellow.	
	....	8½ 8½	Faint rose tint.	
232	159	10 10	.....	Seen; too foggy to measure.
233	....	5 8	Yellow and white....	Definition and observations good.
234	....	9 10	.....	Seen; not measured.
235	159	7 9	.....	
236	159	10 10	.....	
237	....	8	.....	8 magnitude star seen; no companion.
238	159	6 9	.....	9 magnitude star red.
239	159	10 10½	.....	
240	....	8 9	.....	

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's Initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
240	18	4	79	4073.....	..	H.	h. m.	° ' "	183 55	10	1.95	10
241	8	4	80	4075.....	..	H.	8 13	65 58	263 54	10	3.62	10
242	16	4	79	After 4076.....	..	H.	8 15	44 39	146 29	10	4.90	10
243	9	5	81	4077.....	..	H.	8 14	62 29	308 23	6	15.27	6
244	23	4	79	4080.....	..	H.	8 16	46 44	37 17	10	5.37	10
245	9	5	81	4082.....	..	H.	8 14	49 53	270 2	6	10.99	6
246	8	4	80	4084.....	..	H.	8 15	58 48	267 41	10	2.88	10
247	23	4	79	4085.....	..	H.	8 16	36 5	.....	.....	.....	.....
248	28	4	79	4087.....	..	H.	8 18	40 35	308 53	10	1.28	10
249	10	5	81	4089.....	..	H.	8 19	44 28	270 56	6	13.54	6
250	16	4	80	4090.....	..	H.	8 19	42 33	11 57	10	19.20	10
251	10	5	81	4093.....	..	H.	8 23	38 41	122 33	6	7.87	6
252	10	5	81	4094.....	..	H.	8 22	35 8	218 19	6	16.76	6
253	21	3	71	4104.....	R.	..	8 25	47 30	240 22 38 30	4 4	8.96 18.29	4 4
	21	3	72	".....	R.	..	....	....	241 55 39 0	4 2	4.48 18.93	4 2
	23	3	78	".....	R.	..	....	....	240 47 39 0	10 2	3.56 18.23	10 2
	28	4	79	".....	..	H.	....	....	239 6 37 48	10 10	3.27 18.25	10 10
	10	6	80	".....	..	H.	....	....	244 9 41 29	6 4	3.04 18.52	6 4
254	13	3	71	After 4104.....	R.	..	8 25	44 23	348 10	6	6.26	6
	21	3	71	".....	R.	..	....	....	348 4	5	4.92	5
	21	4	79	".....	..	H.	....	....	348 31	10	3.75	10
255	6	5	81	4106.....	..	H.	8 27	36 18	143 1	6	8.00	6
256	18	4	79	4109.....	..	H.	8 27	76 0	127 14	10	25.98	10
257	21	4	79	4111.....	..	H.	8 30	49 30	106 38	10	9.19	10
258	13	5	81	4112.....	..	H.	8 31	48 23	26 52	6	8.50	6
259	6	5	81	4116.....	..	H.	8 33	47 1	0 51	6	7.28	6
260	30	4	79	4119.....	..	H.	8 33	49 0	223 11	10	9.69	10
261	1	5	79	4122.....	..	H.	8 35	45 47	154 20	10	10.10	10
262	7	2	72	4125.....	R.	..	8 35	62 29	233 40	6	8.04	6
263	28	2	72	4126.....	R.	..	8 37	52 30	30 2	6	16.53	6
264	14	2	73	4128.....	R.	..	8 36	59 53	39 38	6	2.28	6
265	6	3	73	4130.....	R.	..	8 37	57 3	224 59	6	4.03	6
266	5	4	72	4134 $\theta$ Volantis.....	R.	..	8 39	69 57	.....	.....	55e	..
									239 56 222 34 359 36	4 2 2	4.51 60.91 51.55	4 2 2
267	12	3	72	4140.....	R.	..	8 42	58 17	290 32	10	4.68	10
	21	4	79	".....	..	H.	....	....	291 32	6	3.71	6
	10	5	81	".....	..	H.	....	....	226 33	6	4.14	6
268	12	3	72	4142.....	R.	..	8 44	57 8	.....	.....	.....	.....
269	23	4	79	4144.....	..	H.	8 45	35 27	313 7	10	2.17	10
270	19	2	74	4145.....	R.	..	8 45	58 33	255 24	4	5.80	4
271	19	2	74	4148.....	R.	..	8 47	58 39	112 28	4	6.46	4
272	30	4	79	4155.....	..	H.	8 51	60 58	.....	.....	.....	.....
	16	4	80	".....	..	H.	....	....	.....	.....	.....	.....
273	5	4	72	After 4156.....	R.	..	8 54	55 3	230e	..	15e	..
274	5	4	72	4160.....	R.	..	8 54	58 47	73 28	4	40.40	4
275	5	4	72	4165.....	R.	..	8 57	51 42	.....	.....	.....	.....
276	22	4	80	4176.....	..	H.	9 2	41 38	.....	.....	.....	.....
277	30	4	79	4178.....	..	H.	9 2	57 22	.....	.....	.....	.....
278	16	4	80	4181.....	..	H.	9 3	54 15	.....	.....	.....	.....
279	26	4	80	4185.....	..	H.	9 5	63 37	241 29	6	9.73	6
280	7	5	79	4188.....	..	H.	9 8	43 7	285 23	10	2.43	10
281	14	5	79	4190.....	..	H.	9 9	57 28	21 29	2	7.73	2
282	25	5	81	4192.....	..	H.	9 10	49 51	9 58	6	25.83	6
283	8	5	79	4195.....	..	H.	9 12	64 23	62 36	10	15.80	10

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
240	150	8 8½	.....	
241	150	10 10	.....	
242	150	8 8	.....	
243	150	10 11	.....	Another in field with this.
244	150	9 9	.....	
245	150	10 11	.....	Definition bad.
246	150	10 10	.....	
247	150	.....	.....	Not seen.
248	150	8 8	.....	Herschel's companions 14 and 15 magnitudes not seen
249	150	10 11	.....	
250	150	8 10	.....	
251	150	8 8	.....	
252	150	9 10	.....	
253	.....	9	{ Yellow and blue ....	} Triple.
	.....	6 8	{ Yellow and blue ....	
	.....	6 10	{ Yellow and whitish..	} Triple.
	.....	6 8	{ Whitish yellow and	
	.....	6 10	{ blue .....	
	.....	6 8	Bright yellow.	
	.....	6 10	10m. white.	
	150	6 9	.....	
	150	6 11	.....	
	150	8 9	.....	
	150	8 11	.....	
254	.....	6 10	Yellow and white....	See diagram. A third star 30° east.
	.....	.....	Yellow and white.	
	150	6 9	.....	
255	150	8 10	.....	Herschel's position 138° 8', and distance 18' 00".
256	150	8 9	.....	
257	150	9 11	.....	
258	150	9 9	.....	
259	150	8 9	.....	
260	150	8 11	.....	
261	150	9 9	.....	Another in field a little south.
262	150	5 10	Yellow and blue ....	Large star ill-defined; think several small stars near
263	.....	7 11	White and light yellow	One of a cluster; definition bad.
264	230	7 8	.....	
265	.....	8 10	.....	Fine double; definition bad.
266	.....	5½ 9	.....	Seen; too ill-defined to measure.
	.....	7 7	Both straw-yellow..	} Definition middling. See diagram.
267	.....	7 11	.....	
	.....	7 11	.....	
	150	8 8	.....	Foggy night.
	150	8 8	.....	
268	.....	7 9	Pale yellow.....	Definition only middling; probably the same as 4130
269	150	7 11	.....	
270	.....	9 9	.....	A small star follows about 8 seconds of time.
271	.....	8 9	.....	
272	150	11 11	.....	Seen; too ill-defined to measure.
	150	.....	.....	Seen; south star seems nebulous.
273	.....	7 8	Red .....	About same angle; very small star: distance 15" and angle 230°, with larger, which is red.
274	.....	6 7½	Both white .....	Seen, but too close to measure to-night; definition bad.
275	.....	6 8	.....	
276	150	9 9	.....	Seen; not measured.
277	150	6 13	.....	Seen; not measured.
278	150	11 11	.....	Seen; not measured.
279	150	9 9	.....	
280	150	7 8	.....	
281	150	7 12	.....	
282	150	9 9	.....	
83	150	9 9	.....	



## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance
					F.	H.						
283	6	5	80	4195.....	..	H.	h. m. 9 11	64 27	62 11	4	16-25	4
284	23	5	81	4198.....	..	H.	9 14	39 58	178 20	6	8-43	6
285	23	5	81	4203.....	..	H.	9 17	69 18	180 35	6	22-74	6
286	19	5	79	4209.....	..	H.	9 21	47 45	16 41	6	10-46	6
									337 14	10	25-38	10
287	23	4	79	4210.....	..	H.	9 21	67 0	236 34	10	8-62	10
288	29	2	72	4211.....	R.	..	9 21	35 10	..	..	..	..
289	7	4	74	4213.....	R.	..	9 23	61 25	325 25	3	9-06	3
	3	5	79	"	..	H.	..	..	327 21	10	8-58	10
290	23	3	72	4214.....	R.	..	9 23	78 8	191 43	4	9-64	4
291	23	5	81	4216.....	..	H.	9 24	69 26	383 56	6	13-78	6
292	20	5	79	4218.....	..	H.	9 23	35 56	26 53	2	5-46	2
293	29	2	72	4220.....	R.	..	9 30	48 23	202 54	3	..	..
	30	4	79	"	..	H.	9 30	48 23	205 22	10	1-58	10
294	23	3	72	4226.....	R.	..	9 32	77 44	..	..	..	..
295	23	3	72	4230.....	R.	..	9 34	77 30	..	..	..	..
296	26	4	71	4232.....	R.	..	9 35	57 3	302 48	5	11-16	5
	19	5	79	"	..	H.	..	..	303 13	10	10-46	10
297	28	4	79	4235.....	..	H.	9 37	50 36	58 13	10	4-66	10
298	23	5	79	4248.....	..	H.	9 42	69 16	319 30	10	10-12	10
299	28	4	79	4249.....	..	H.	9 44	34 27	126 2	10	4-03	10
300	23	5	79	4251.....	..	H.	9 44	60 30	314 35	10	12-09	10
301	22	4	71	4252.....	R.	..	9 45	64 30	125 24	7	4-90	7
	29	6	80	"	R.	..	..	..	124 22	2	5-13	2
302	17	4	71	4258.....	R.	..	9 46	75 20	160 31	6	9-01	6
	30	4	79	"	..	H.	..	..	159 25	10	8-39	10
303	7	5	79	After 4264.....	..	H.	9 50	44 42	235 34	10	5-01	10
	2	6	81	"	..	H.	9 49	44 47	230e	..	..	..
304	24	3	71	4265.....	..	H.	9 49	79 56	229 20	7	13-10	7
	16	4	80	"	..	H.	9 47	80 6	227 45	10	13-13	10
305	20	5	79	4269.....	..	H.	9 52	68 38	213 15	10	8-78	10
306	17	4	71	4272.....	R.	..	9 54	85 28	87 43	6	15-50	6
	8	3	72	"	..	H.	..	..	88 17	4	15-04	4
	13	5	79	"	..	H.	..	..	268 36	10	15-56	10
307	13	5	79	4281.....	..	H.	9 59	79 49	..	..	..	..
308	28	2	72	4283.....	R.	..	10 0	51 12	178 54	6	8-24	6
	5	4	72	"	..	R.	..	..	177 26	6	8-08	6
309	16	4	80	4288.....	..	H.	10 3	75 29	289 59	10	31-33	10
310	20	3	72	4292.....	R.	..	10 6	65 13	..	..	..	..
311	21	6	81	4297.....	..	H.	10 7	54 38	305 17	6	9-76	6
									120e	..	20e	..
312	27	5	79	4301.....	..	H.	10 10	65 9	23 41	10	6-61	10
313	24	3	73	4306.....	R.	..	10 15	64 4	187 47	4	2-38	4
	7	5	80	"	R.	..	..	..	..	..	..	..
314	24	3	71	4310.....	R.	..	10 12	33 30	273 50	4	3-90	4
	7	6	81	"	..	H.	..	..	270 26	6	2-99	6
315	13	5	79	4312.....	..	H.	10 17	47 21	264 52	10	30-09	10
316	7	5	79	4314.....	..	H.	10 17	66 55	12 14	10	18-59	10
317	7	6	81	4323.....	..	H.	10 24	61 58	219 46	6	21-89	6
318	4	5	80	4324.....	..	H.	10 25	64 50	63 48	4	7-62	4
	2	6	81	"	..	H.	..	..	66 17	6	7-24	6
319	7	6	81	4327.....	..	H.	10 26	53 51	352 4	6	113-07	6
320	7	6	81	4328.....	..	H.	10 26	51 18	105 50	6	18-72	6
321	19	5	79	After 4328.....	..	H.	10 27	44 25	36 19	10	13-09	10
322	21	3	73	4329.....	R.	..	10 26	53 4	63 41	4	21-89	4
	13	6	81	"	..	H.	..	..	71 40	6	23-43	6
323	23	5	79	4335.....	..	H.	10 29	69 34	217 2	10	7-56	10
324	21	3	73	4341.....	R.	..	10 34	54 50	..	..	..	..

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
283	150	10 11	.....	The two southern stars. } See diagram. The two extremes. Another pair in the field north of this. Triple; 3rd star about Herschel's position and distance.
284	150	10 10	.....	
285	150	9 9	.....	
286	150	8 9	.....	
287	150	9 11	.....	Not divided; definition bad. Clouds stopped observations.
288	.....	6 10	.....	
289	.....	7 10	.....	Very pretty; well defined. Very faint.
290	150	9 9½	.....	
291	150	10 11	.....	A beautiful double star.
292	150	7 12	.....	
293	.....	6 7	.....	Seen, about the same position; not measured. A and B not more than 10 and 13 magnitudes; C not seen.
294	150	7 7	.....	
295	.....	10 13	.....	Clouds about.
296	230	9 9	White .....	
297	150	8½ 9	.....	
298	150	9 9	.....	
299	150	9 10	.....	Fine, clear, E. wind; magnitudes uncertain. Another pair in the field with this, south following.
300	150	9 10	.....	
301	230	8 9	.....	
302	800	3 9	.....	
303	.....	9 9	Both white-yellow.	Seen; too faint to measure.
304	150	9 9	.....	
305	150	8 9	.....	
306	150	8 8	Yellow.	
307	150	8 8	Both white.	Seen; clouds prevented measures.
308	150	7 7	.....	
309	150	9 10	Both white.	
310	.....	8 9	Both white.	
311	150	6 8	.....	Triple. See diagram.
312	150	6 11	.....	
313	150	9 10 11	.....	
314	150	10 10	Both yellow .....	
315	150	7 7	.....	Very beautiful and well defined. Seen; not measured. There is no double at 63° 36' S., nor at 50 seconds following it.
316	150	7 7	.....	
317	150	9 9½	Both yellow .....	
318	150	10 10	.....	
319	150	9 9½	.....	Definition fair.
320	150	10 10	.....	
321	150	8 8	.....	
322	150	10 11	.....	
323	150	6 6	.....	Yellow and brick-red
324	150	5½ 9	.....	
325	150	5 9	.....	
326	150	5 9	.....	
327	150	5 9	.....	Straw-yellow and greenish blue.
328	150	5 9	.....	
329	150	5 9	.....	
330	150	5 9	.....	
331	150	5 9	.....	Glimpses of several minute points near this.
332	150	5 9	.....	
333	150	5 9	.....	
334	150	5 9	.....	

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's Initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
325	26	5	71	B 3127 .....	R.	..	h. m. 10 35	58 34	19 8	2	15.19	2
	26	6	71	.....	R.	..	.....	.....	20 50	4	14.16	4
326	6	6	79	4351.....	..	H.	10 38	60 38	173 37	10	12.09	10
327	26	4	71	4356.....	R.	..	10 39	58 56	118 10	2	1.96	2
328	5	6	79	4356.....	..	H.	10 39	58 56	236 23	2	10.67	2
329	9	6	79	1st after 4359 .....	..	H.	10 39	58 57	145 23	10	2.19	10
330	9	6	79	4360.....	..	H.	10 39	58 57	105 25	10	12.46	10
331	17	6	81	4362.....	..	H.	10 40	43 9	114 2	10	1.58	10
332	7	5	79	4367.....	..	H.	10 41	56 18	303 17	6	24.99	6
333	13	6	79	4373.....	..	H.	10 43	40 54	142 15	10	12.20	10
334	17	6	81	4376.....	..	H.	10 43	69 54	837 3	10	12.66	10
335	13	5	79	4378.....	..	H.	10 47	59 18	131 51	6	17.06	6
336	10	6	79	4381.....	..	H.	10 49	38 12	345 5	10	31.10	10
337	18	4	71	4383.....	R.	..	10 50	70 5	41 20	10	25.44	10
				.....	..	..	.....	.....	275 16	7	0.79	7
	22	4	71	" .....	R.	..	.....	.....	.....	..	.....	..
	14	5	73	" .....	R.	..	.....	.....	279 31	6	2.06	6
	19	5	79	" .....	..	H.	.....	.....	283 6	10	1.15	10
338	18	4	71	4390.....	R.	..	10 53	82 34	.....	..	.....	..
339	9	6	79	4392.....	..	H.	10 53	70 42	159 23	10	24.81	10
340	20	5	79	4393.....	..	H.	10 53	63 25	132 41	10	8.45	10
	11	6	79	.....	..	H.	.....	.....	129 2	10	8.15	10
341	25	4	73	4397.....	R.	..	10 57	59 11	.....	..	.....	..
342	20	6	81	4398.....	..	H.	10 58	56 41	249 40	6	7.50	6
343	6	6	79	4399.....	..	H.	10 59	59 56	133 6	10	8.84	10
344	22	4	71	4409.....	R.	..	11 2	41 58	.....	..	1.15e	..
	19	5	79	" .....	..	H.	.....	.....	.....	..	.....	..
	6	6	79	" .....	..	H.	.....	.....	.....	..	.....	..
	17	6	79	" .....	..	H.	.....	.....	272 42	10	1.80	10
345	27	6	81	4417.....	..	H.	11 3	54 51	143 59	6	17.42	6
346	10	6	79	4421.....	..	H.	11 11	47 15	.....	..	.....	..
347	10	6	79	4423.....	..	H.	11 11	45 14	274 37	10	1.71	10
	5	5	80	" .....	R.	..	.....	.....	273 22	6	2.19	6
348	3	5	71	4425.....	R.	..	11 14	63 54	.....	..	.....	..
	13	5	71	" .....	R.	..	.....	.....	.....	..	.....	..
	14	5	73	" .....	R.	..	11 14	63 54	.....	..	.....	..
349	1	7	81	4431.....	..	H.	11 17	54 23	226 41	6	9.46	6
350	3	5	71	4432.....	R.	..	11 18	64 22	292 20	6	2.55	6
	14	5	73	" .....	R.	..	.....	.....	294 23	6	3.14	6
	3	6	79	" .....	..	H.	.....	.....	292 16	10	1.80	10
351	27	6	81	4434.....	..	H.	11 20	54 40	232 6	6	11.18	6
352	2	6	71	4439.....	R.	..	11 23	42 3	166 22	4	13.26	4
	21	3	73	" .....	R.	..	.....	.....	.....	..	.....	..
	10	6	79	" .....	..	H.	11 23	42 7	163 11	10	13.26	10
353	30	5	72	4440.....	R.	..	11 24	77 51	.....	..	.....	..
354	1	7	81	4441.....	..	H.	11 24	55 14	174 25	6	8.88	6
355	18	6	79	4453.....	..	H.	11 28	48 50	.....	..	15 e	..
356	13	6	79	4459.....	..	H.	11 28	48 45	.....	..	.....	..
357	9	6	74	4460.....	R.	..	11 34	57 4	176 40	6	9.00	6
	6	6	79	" .....	..	H.	.....	.....	176 31	10	8.19	10
358	3	5	71	4462.....	R.	..	11 34	82 23	.....	..	.....	..
359	29	4	80	4467.....	R.	..	11 37	46 33	142 43	..	18 e	..
360	3	5	71	4468.....	R.	..	11 37	82 23	153 21	3	20.10	3

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
325	....	5½ 7½	Bright yellow and sky blue.	Fine, clear. B=Brisbane.
	150	5½ 7	Yellow and blue ....	
326	150	8 9	.....	
327	150	....	.....	In η Argus, cluster triple.
328	150	8 10	.....	
329	150	9 10	.....	
330	150	10 10½	.....	The 10th magnitude star in these two pairs is the same.
331	150	9 9	.....	
332	150	10 10	.....	
333	150	9 10	.....	Angle 111° more than Herschel's. Is it in motion. (?)
334	150	9 10	.....	
335	150	7 10	.....	
336	150	8 9	.....	
337	150	7 8	.....	Divided with No. 2 (150); tried 580 to measure distance; distance = diameter of one of the wires = 0.786.
	....	....	.....	Tried wire on it for distance; thicker wire = distance from centre to centre, the other wire too thin. Distance unsatisfactory.
	338	7 8	.....	
	150	6 8	.....	
338	....	....	.....	Not found.
339	150	8 8	.....	
340	150	7 9	.....	
	150	8 10	.....	
341	....	11 11	.....	Seen; too small to measure to-night, hazy; definition middling.
342	150	9 10	.....	
343	150	10 10	.....	
344	230 & 580	5 9	.....	Seen; could not measure.
	150	....	.....	Seen; not measured.
	150	5 9	.....	Seen; too ill-defined to measure.
	150	6 8	.....	
345	150	9 10	.....	
346	150	6 13	.....	Seen; not measured.
347	150	9 9	.....	
	....	9 9	.....	
348	230	7 0	.....	Looked carefully at all the stars near; this is the only double; Herschel must have seen this twice.
	150 & 230	7 0	.....	Not divided; definition not first-rate.
	....	....	.....	Not divided; position seems wrong, but no other 7 magnitude star nearer than Herschel's 4482.
	....	....	.....	Not seen.
349	150	10 11	.....	
350	230	6 7	Faint greenish yellow	Divided with power 100, seen double with 150, measured with 230.
	140	6 8	Both straw-yellow.	
	150	6 9	.....	
351	150	10 10	.....	
352	....	6 8½	Both faint yellow....	Large star round disc.
	....	6 9	Ruddy .....	Small star, ruddy; cannot divide the large star; definition not good.
	150	6 9	.....	
353	....	7 0	.....	Companion not seen.
354	150	9 11	.....	
355	150	11 11	.....	Clouds prevented observations.
356	150	10 10	.....	Seen; not measured.
357	....	8 9	Both white.	
	150	7 9	.....	
358	....	9 10	.....	Seen in field with Herschel's 4468; not measured
359	....	10 11	.....	Seen; no measures.
360	....	7 11	Yellow and blue.	

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
	20	5	80	4468.....	R.	..	h. m. 11 33	° ' 82 28	° ' 140 e	..	24 e	..
360a	3	6	80	4475.....	R.	..	11 43	60 55	310 e	..	34 e	..
	1	8	81	".....	H.	..	11 37	82 26	150 e	..	..	..
361	6	6	72	4480.....	R.	..	11 49	53 59	..	..	..	..
362	13	6	79	4483.....	H.	..	11 52	70 42	108 26	10	10.34	10
363	21	3	72	4486 ε Chamaeleontis	R.	..	11 53	77 32	..	..	2 e	..
	6	6	72	".....	R.	..	..	..	178 58	4	1.47	4
	6	4	74	".....	R.	..	..	..	180 13	6	1.88	6
364	13	6	79	4487.....	H.	..	11 54	36 11	126 56	10	5.11	10
365	12	5	71	4490.....	R.	..	12 0	85 2	144 3	5	25.67	5
	10	6	79	".....	H.	..	..	..	145 29	10	25.14	10
366	19	4	71	4498.....	R.	..	12 1	65 2	60 7	5	8.88	5
367	16	6	79	4502.....	H.	..	12 2	75 50	358 38	10	18.89	10
368	21	3	72	4504.....	R.	..	12 9	82 41	..	..	..	..
369	5	6	79	4507.....	H.	..	12 6	44 14	179 11	10	12.94	10
370	20	5	72	After 4507.....	R.	..	12 8	45 2	244 12	6	3.86	6
	11	6	79	".....	H.	..	12 8	45 7	246 13	10	2.49	10
371	15	7	81	4508.....	H.	..	12 9	55 13	33 32	6	23.71	6
372	13	6	79	4510.....	H.	..	12 9	35 50	{ 320 e 60 e }	..	..	..
373	2	7	79	4511.....	H.	..	12 11	55 4	295 42	10	8.45	10
374	8	7	81	4518.....	H.	..	12 17	40 46	206 56	6	9.49	6
375	22	5	71	4521.....	R.	..	12 19	57 27	..	..	..	..
376	25	4	71	4521 α Crucis	R.	..	12 20	62 26	{ 120 53 201 50 121 5 202 10 118 0 118 57 201 39 120 5 117 27 }	5 2 4 6 11 6 2 4 6	5.62 89.92 5.52 99.13 5.13 5.09 89.36 5.47 5.34	5 2 4 6 11 6 2 4 6
	16	5	71	" "	R.	..	"	"	..	..	..	..
	3	6	71	" "	R.	..	"	"	..	..	..	..
	13	7	71	" "	R.	..	"	"	..	..	..	..
	6	6	72	" "	R.	..	"	"	..	..	..	..
	3	3	76	" "	R.	..	"	"	..	..	..	..
	6	6	79	" "	H.	..	..	..	117 21	9	4.75	10
377	2	5	72	4522.....	R.	..	12 19	68 48	67 16	6	12.99	6
	2	6	74	".....	R.	..	..	..	66 46	6	13.02	6
378	22	5	71	4525.....	R.	..	12 24	57 9	..	..	..	..
	9	6	71	".....	R.	..	..	..	..	..	..	..
	7	6	80	".....	R.	..	12 28	57 13	51 13	2	25.29	2
379	9	6	71	4526 γ Crucis	R.	..	12 23	56 29	35 9	4	100.67	4
	17	6	79	" "	H.	..	..	..	34 40	10	101.98	10
380	7	7	81	4584.....	H.	..	12 32	57 25	282 24	6	14.84	6
381	22	5	71	4589 γ Centauri	R.	..	12 35	48 13	3 50	8	1.13	8
	14	5	73	" "	R.	..	..	..	4 13	7	2.29	7
	6	4	74	" "	R.	..	..	..	1 38	5	1.61	6
	12	6	80	" "	R.	..	..	..	1 16	9	1.39	9
382	16	6	79	4540.....	H.	..	12 35	72 10	167 35	10	11.07	10
383	25	4	71	4544.....	R.	..	12 40	78 43	..	..	..	..
	22	5	71	".....	R.	..	..	..	..	..	..	..
	9	6	71	".....	R.	..	..	..	..	..	..	..
384	4	7	79	4545.....	H.	..	12 38	74 35	192 1	10	8.96	10
385	5	6	73	4550.....	R.	..	12 40	66 23	98 11	4	13.12	4
	16	7	80	".....	R.	..	..	..	94 55	4	13.99	4
386	11	7	79	4555.....	H.	..	12 47	56 34	17 22	10	34.30	10
387	19	7	81	4561.....	H.	..	12 53	77 13	45 56	6	19.26	6
388	15	7	81	After 4561.....	H.	..	12 53	55 19	126 43	6	16.25	6
389	2	7	79	4562.....	H.	..	12 53	47 59	73 16	10	11.07	10

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
	250	7 10	Yellow and blue ....	Position and distance estimated; another double in the field with this.
360a	100	9 10	.....	Small star just visible in dark field. See R. 175.
	159	7 14	.....	No companion found; four stars about 2' apart.
361	....	9 0	.....	Light wires.
362	159	11 11	.....	Clearly divided; not measured.
363	230	6 10	.....	Sensibly constant since 1835.
	....	6 6½ or 7	.....	Position very difficult and unsatisfactory.
	323	6 6½	.....	
364	159	10 10	.....	
365	....	7 10	Yellow and blue ....	This is almost exactly the same as 4468 in colour; distance and angle very striking.
	159	7 10	.....	
366	....	7 9	.....	
367	159	10 11	.....	Not found.
368	....	....	.....	Herschel's position angle, 227°.
369	159	9 10	.....	
370	....	5 7	Yellow.	
	159	5 7	.....	
371	159	9 10	.....	
372	159	{ 9 10 } { 9 13 }	.....	Doubtful if this is H. 4510.
373	159	10 10	.....	
374	159	8 10	.....	
375	....	9 9	Both red.	
376	{ 150 } { 150 }	2-2½-5	.....	
	....	....	White.	See diagram.
	....	....	White and yellow.	Disks seem equal, if any difference $\delta$ is a shade less than $\alpha$ ; definition moderate; hazy.
	230	....	.....	Definition pretty good; stars dancing a good deal.
	239	....	.....	
	239	....	.....	Thick fog, and stars dancing.
	200	2 2½	.....	Cloudy 6 hours past meridian; definition fair; 8 inches aperture $\alpha$ $\frac{1}{2}$ larger than $\delta$ .
	159	2 2½	.....	
377	....	8 9	.....	
	150	8 9	.....	Fine clear night.
378	....	10 11	.....	Not found; H gives no description.
	....	....	.....	Not found.
	....	10 11	.....	
379	....	....	{ Pale yellow. Faint green.	
	159	2 5	.....	
380	159	10 10	.....	
381	333	4 4	.....	Very fine definition; seen double with 150; measured with No. 4; two round clear discs.
	333	4 4	.....	Definition very bad; both stars are one blurred patch.
	333	....	.....	Difficult; stars very unsteady; elongated with 150 power.
	800	4 4	.....	Definition good, but stars rather unsteady.
382	159	9 9	.....	
383	....	9 9	.....	Not made out.
	....	....	.....	Not seen.
	....	....	.....	No companion found; definition moderate.
384	159	9 9	.....	
385	150	8 9	.....	Fine and clear, after a heavy shower.
	200	7 9	.....	No other pair found near this.
386	159	5 6	.....	
387	159	11 11	.....	
388	159	9 9	.....	
389	159	9 9	.....	

## DOUBLE Stars observed and

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					R	H.						
390	13	5	71	4567.....	R.	..	h. m. 13 0	47 48	..	..	..	..
	9	6	71	..	R.	..	..	..	50e	..	18e	..
391	4	6	72	4568 $\theta$ Muscae .....	R.	..	13 1	64 38	182 44	6	5.35	6
	16	6	79	..	H.	..	..	..	185 17	10	5.03	10
392	5	6	73	4569.....	R.	..	13 1	56 2	239 36	6	4.75	6
393	15	7	81	4570.....	..	H.	13 1	36 37	231 45	6	18.10	6
394	8	7	79	4571.....	..	H.	13 5	34 36	263 15	10	23.27	10
395	13	5	71	4576.....	R.	..	13 8	56 28	129 41	6	5.40	6
	20	6	73	..	R.	..	..	..	130 30	5	6.42	5
	10	6	80	..	R.	..	..	..	128e	..	..	..
396	13	5	71	4577.....	R.	..	13 10	59 11	220e	..	..	..
	9	6	74	..	R.	..	..	..	236 5 52 5	4	12.66 7.42	4 5
397	20	6	71	4579.....	R.	..	13 18	63 27	95 1	6	4.58	6
	4	7	79	..	H.	..	..	..	97 53	10	4.14	10
	10	6	80	..	R.	..	..	..	97 50	2	4.25	4
	25	6	80	..	H.	..	..	..	100 34	6	3.99	6
398	2	6	71	After 4579 .....	R.	..	13 18	60 21	343 8	2	60.19	2
	10	7	79	..	H.	..	..	..	343 8	10	59.72	10
399	15	6	71	4586.....	R.	..	13 21	67 17	146 3	2	3.68	2
	2	6	74	..	R.	..	..	..	151 45	6	3.96	6
400	8	7	81	4587.....	..	H.	13 19	42 26	35 24	6	4.96	6
401	1	6	80	4590.....	..	H.	13 23	76 56	134 56	10	22.41	10
402	16	7	79	4594.....	..	H.	13 29	79 58	99 46	10	5.31	10
403	20	7	81	4595.....	..	H.	13 29	35 5	98 10	6	7.78	6
404	12	5	71	4596.....	R.	..	13 29	65 7	..	..	..	..
	9	6	71	..	R.	..	..	..	..	..	..	..
	14	6	71	..	R.	..	..	..	..	..	..	..
	28	4	80	..	R.	..	..	..	..	..	..	..
	5	5	80	..	R.	..	..	..	..	..	..	..
405	20	6	71	4598.....	R.	..	13 32	74 31	45 23	7	12.60	5
406	20	6	71	1713 $\zeta$ Centauri .....	R.	..	13 34	54 0	163 39	5	5.25	5
407	22	7	80	4600.....	..	H.	13 35	48 23	143 51	2	16.58	2
408	2	7	79	4601.....	..	H.	13 32	39 9	105 4	10	10.57	10
409	20	7	81	4602.....	..	H.	13 33	45 10	189 31	6	23.19	6
410	22	7	79	4603.....	..	H.	13 36	58 42	90 46	10	32.33	10
411	25	4	71	After 4612 .....	R.	..	13 41	61 26	34 54	5	12.05	5
	4	7	79	..	H.	..	..	..	34 42	10	11.57	10
412	20	7	81	4614.....	..	H.	13 41	42 35	230 36	6	12.70	6
413	21	7	79	4615.....	..	H.	13 42	46 43	256 34	10	8.73	10
414	14	6	71	4617.....	R.	..	13 45	52 14	239 32	5	18.08	5
	27	6	79	..	H.	..	..	..	..	..	..	..
415	26	7	81	4619.....	..	H.	13 45	47 13	199 12	6	23.56	6
416	10	7	79	After 4624 .....	..	H.	13 47	50 11	76 8	10	17.44	10
417	12	6	71	4628 $\zeta$ Centauri .....	R.	..	13 49	46 42	..	..	..	..
418	30	6	80	4629.....	..	H.	13 50	77 54	356 57	6	4.39	6
	6	7	80	..	H.	..	..	..	356 31	6	4.06	6
419	18	6	74	4630.....	R.	..	13 49	65 4	314 31	6	4.46	6
420	26	7	81	4631.....	..	H.	13 50	69 49	84 40	6	10.53	6
421	10	7	81	4632.....	R.	..	13 49	65 5	17 20	6	6.03	6
422	26	7	81	4634.....	..	H.	..	..	13 40	6	5.74	6

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
390	.....	5 0	.....	No companion found.
391	.....	7 14	.....	Small star faint; seen only in glimpses; not measured.
.....	159	7 9	Both white	Stars steady, but ill-defined.
392	159	7 9	.....	.....
393	159	8 10	.....	.....
394	159	9 10	.....	.....
395	159	7 10	.....	.....
.....	.....	7 10	Yellow and blue.	Stars bright and clear, but ill-defined; angle observations difficult and unsatisfactory.
.....	.....	7 10	.....	Another double near this R.A. and dec.; position 129° 15' R. 218.
396	.....	9 9	.....	Triple. See diagram.
.....	.....	10 10	.....	{ All covered by the wire at once, although 11 magnitude star seems a little south of the line; a 10 magnitude star 120e pos. 12"e not mentioned by Herschel.
.....	.....	10 11	.....	
397	159	9 9½	White.	Telescope unsteady.
.....	159	9 9	.....	Fine double star.
.....	159	8½ 9	.....	.....
.....	159	8 9	.....	.....
398	.....	6 7	.....	.....
.....	159	5 7	.....	.....
399	.....	8 10	.....	.....
.....	.....	8 10	.....	.....
400	159	10 10	.....	.....
401	159	6 10	.....	.....
402	159	10 10	.....	.....
403	159	9 9	.....	.....
404	230	8 0	.....	Cannot divide this star.
159, 230,	{	.....	.....	Not divided.
333		.....	.....	Not found; one seen at 64° 16' declination; position 130° e.; distance, 1" e. See R 222.
.....	.....	9 0	.....	11½ inches aperture; in Herschel's position is an 8 magnitude star which I cannot divide, but at R.A. 13h. 30m. and dec. 64° 16' is a double similar to Herschel's.
.....	.....	8 0	.....	Only one double, here at declination 64° 16'; no double in Herschel's position.
.....	.....	.....	.....	Very difficult.
405	.....	6 13	Yellow	Measures not good. 1713 in Herschel's list of measures, page 257.
406	.....	6 7	.....	Atmosphere very unsteady.
407	159	7 9	.....	.....
408	159	10 10	.....	.....
409	159	9 10	.....	.....
410	159	8 9	.....	.....
411	159	8 9	Red and green.	.....
.....	159	8 8½	.....	.....
412	159	9 10½	.....	.....
413	159	9 9½	.....	.....
414	.....	7 8	.....	Definition bad.
.....	159	.....	.....	Seen; not measured.
415	159	8 10	.....	.....
416	159	9 9	.....	Telescope unsteady.
417	.....	8 0	.....	No companion found.
418	159	9 9½	.....	.....
.....	.....	10 11	.....	.....
419	140	8 8½	.....	Well defined.
420	159	11 11	.....	.....
421	.....	6 10	.....	The following and southern of two pairs.
.....	159	6 11	.....	.....



## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
							h. m.	° ' "	° ' "			
422	26	7	81	4634.....	..	H.	13 49	55 24	9 44	6	10.71	6
423	5	7	80	4635.....	..	H.	13 51	78 13	251 14	6	12.40	6
424	3	7	72	4642.....	R.	..	13 58	62 52	330e 10e	..	..	..
425	4	8	81	4645.....	..	H.	13 59	57 8	202 11	6	12e	..
426	2	7	72	4646.....	R.	..	14 0	53 8	22 49	4	22.10	4
427	4	8	81	4648.....	..	H.	14 2	76 46	206 19	6	10.03	6
428	12	5	71	4649.....	R.	..	14 1	59 10	64 45	5	8.22	5
	28	6	72	"	R.	..	..	..	64 23	10	8.02	10
	8	7	79	"	..	H.	..	..	11 4	6	7.57	6
429	29	6	80	4654.....	..	H.	14 1	66 10	110e	..	18e	..
430	9	8	81	4665.....	..	H.	14 9	42 46	73 0	..	..	..
431	7	6	72	4667.....	R.	..	14 11	78 0	138 15	10	1.60	10
	11	7	79	"	..	H.	14 11	79 83	126 50	6	6.76	6
432	28	6	72	4671.....	R.	..	14 15	..	303 80	6	3.58	6
	17	5	73	"	..	R.	..	..	160 19	4	9.91	4
433	9	8	81	4672.....	..	H.	14 13	42 35	1 0	2	44.69	2
434	2	6	71	After 4672.....	R.	..	14 14	57 54	158 4	5	9.66	4
	9	6	71	"	R.	..	..	..	1 45	2	47.05	2
	16	7	79	"	..	H.	..	..	159 54	10	9.01	10
435	28	6	72	4676.....	R.	..	14 19	59 6	..	..	..	..
	17	6	74	"	R.	..	..	..	262 10	4	20.85	4
				"	..	..	..	..	240 41	4	14.05	4
436	12	6	71	4683.....	R.	..	14 21	61 48	..	..	12e	..
437	3	7	72	4684.....	R.	..	14 25	64 21	..	..	15e	..
438	18	6	74	4685.....	R.	..	14 27	45 88	..	..	14e	..
	22	3	82	"	R.	..	"	"	88 22	6	2.21	6
	11	6	80	"	R.	..	"	"	..	..	2e	..
439	11	6	80	4690.....	R.	..	14 29	45 40	23 35	4	19.77	4
440	29	7	79	4691.....	..	H.	14 35	55 17	272 28	10	11.74	10
441	26	9	70	α Centauri	R.	..	14 32	60 21	21 0	1	9.8	1
	27	9	70	"	R.	..	"	"	21 68	5	10.40	5
	28	9	70	"	R.	..	"	"	22 55	4	10.47	4
	3	10	70	"	R.	..	"	"	22 21	5	10.26	5
	5	10	70	"	R.	..	"	"	22 5	5	10.70	5
	14	10	70	"	R.	..	"	"	20 14	1	9.60	1
	3	6	71	"	R.	..	"	"	22 54	10	10.25	10
	18	7	71	"	R.	..	"	"	25 5	5	10.02	5
	7	6	72	"	R.	..	"	"	25 54	6	9.79	6
	5	7	72	"	R.	..	"	"	25 8	3	9.69	3
	2	5	73	"	R.	..	"	"	28 24	6	9.50	6
	13	6	74	"	R.	..	"	"	30 1	10	7.71	10
	29	6	74	"	R.	..	"	"	30 2	10	8.22	10
	23	5	76	"	R.	..	"	"	33 55	10	4.55	10
	8	6	76	"	R.	..	"	"	32 8	10	4.25	10
	5	7	77	"	R.	..	"	"	72 52	10	2.60	10
	7	7	77	"	R.	..	"	"	72 57	6	3.04	8

measured at Sydney Observatory—*continued*.

No. of star in this catalogue	Magnifying power used.	Magnitudes.	Colours.	Remarks.
422	....	7 10	10 m. blue.	$\Delta$ 's angle $0^{\circ} 0'$ . h $310^{\circ} 6$ .
423	159	11 11	.....	.....
424	....	8 12	} Orange red	Not measured; seems unchanged.
425	159	8 16		
426	150	10 11	.....	Two other pairs in the field; Herschel's angle $231^{\circ} 3$ .
427	159	8 0	Orange red & greenish blue.	Angles only middling.
428	230	10 10	.....	.....
429	159	8 8	Red	Definition middling.
430	159	9 10	Both red	Hazy night; position appears unaltered.
431	159	9 9	Both red.	
432	159	8 12	.....	Seen; not measured.
433	159	8 9	.....	Only a glimpse; seems unaltered; very foggy.
434	159	9 9	.....	.....
435	159	8 9	.....	Seen; night hazy; position appears unaltered.
436	159	8 9	.....	Badly defined and hazy.
437	159	4 9	.....	.....
438	159	6 8	} Yellow and greenish.	See diagram.
439	159	6 11		
440	159	6 8	} Yellow.	Herschel's 11 magnitude companion not seen.
441	159	6 10		
442	159	8 8	.....	Too faint to measure to-night.
443	159	8 9	.....	.....
444	140	8 9	.....	{ Some nebulous light about these stars, but diffused. Herschel appears to have measured $8-9$ . Diagram shows 12 magnitude star, about $260^{\circ}$ 's position, and about $60''$ distant. See diagram.
445	140	8 10	.....	
446	140	8 10	.....	
447	140	8 10	.....	Two separate pairs in the same field, not a triple.
448	140	10 10	.....	No double near this position.
449	140	10 11	.....	Seen well with 140 power; angle seems same as Herschel, but distance cannot be less than $1\frac{1}{2}''$ .
450	200	10 11	.....	.....
451	100	.....	.....	Easily divided with power 100; must be $2''$ distance.
452	100	.....	.....	A very beautiful object.
453	159	6 12	Yellow and blue.	.....
454	159	9 10	.....	.....
455	159	1 2	.....	Definition good.
456	159	.....	.....	Definition good; stars have sharp round discs.
457	159	.....	.....	Stars very unsteady.
458	159	.....	.....	Fine clear moonlight.
459	159	.....	.....	Strong wind, much vibration.
460	250	.....	.....	.....
461	250	.....	.....	Observations only middling, stars dancing a good deal.
462	250	.....	.....	Very thick fog.
463	250	.....	.....	Clouds stopped observations.
464	353	.....	.....	Stars dancing.
465	140	.....	.....	First look through 11 $\frac{1}{2}$ -inch equatorial; small star looks more yellow than usual.
466	140	.....	Yellow & dark yellow	Definition good; small star looks a darker yellow than large one.
467	180	.....	White	Stars tremulous and watery; aperture 6 inches.
468	544	.....	.....	Aperture 4 inches; moderately steady; large star's diameter = $\frac{4}{3}$ of the small star.
469	450	.....	.....	$\alpha^2$ is $\frac{2}{3}$ the size of $\alpha^1$ ; aperture 8 inches; stars dancing.
470	450	.....	.....	Aperture 8 inches; stars dancing.

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
	7	7	77	$\alpha$ Centauri .....	R.	..	h. m. 14 32	60 21	72 31	8	3.55	8
	20	7	77	" .....	R.	..	"	"	79 27	10	2.09	10
	20	7	77	" .....	R.	..	"	"	78 6	4	2.45	4
	24	7	77	" .....	R.	..	"	"	82 27	4	2.18	4
	24	7	77	" .....	R.	..	"	"	75 56	6	2.16	6
	25	7	77	" .....	R.	..	"	"	75 27	14	2.11	14
	3	8	77	" .....	R.	..	"	"	82 24	6	1.93	6
	6	8	77	" .....	R.	..	"	"	83 1	5	1.93	5
	6	8	77	" .....	R.	..	"	"	82 6	6	1.87	6
	7	8	77	" .....	R.	..	"	"	79 27	7	1.86	7
	18	2	78	" .....	R.	..	"	"	115 10	10	1.66	10
	28	2	78	" .....	R.	..	"	"	116 59	10	1.77	10
	4	3	78	" .....	R.	..	"	"	116 10	20	1.89	19
	20	3	71	" .....	R.	..	"	"	120 59	4	2.16	4
	28	3	78	" .....	R.	..	"	"	122 20	10	1.80	10
	13	4	78	" .....	R.	..	"	"	127 22	10	1.77	10
	5	6	79	" .....	H.	..	"	"	172 33	4	3.79	4
	11	7	79	" .....	H.	..	"	"	174 33	10	3.03	10
	12	6	80	" .....	R.	..	"	"	184 59	10	5.52	10
	13	4	81	" .....	H.	..	"	"	189 53	4	5.07	4
	19	7	81	" .....	H.	..	"	"	190 8	6	7.52	6
442	14	6	71	{ 2nd after 4691 $\alpha$ Circini. ....	R.	..	14 32	64 26	240 7	4	15.74	4
	1	6	72	" .....	R.	..	....	....	240 26	6	15.66	6
	16	7	79	" .....	H.	..	....	....	238 34	10	15.19	10
443	25	7	79	4692 .....	H.	..	14 33	42 11	117 16	10	10.34	10
444	2	7	72	4693 .....	R.	..	14 34	54 41	22 11	4	6.05	4
445	1	6	72	2nd after 4693 .....	R.	..	14 37	55 3	107 42	3	67.59	3
446	3	7	72	4695 .....	R.	..	14 38	74 28	....	..	..	..
447	4	6	72	4697 .....	R.	..	14 39	70 2	....	..	..	..
	10	7	79	" .....	H.	..	....	....	136 59	10	14.97	10
448	8	7	72	4698 .....	R.	..	14 39	51 52	....	..	..	..
449	10	7	71	4699 .....	R.	..	14 40	58 54	124 46	4	36.39	4
450	4	6	72	4703 .....	R.	..	14 43	78 1	....	..	..	..
451	15	7	81	4706 .....	H.	..	14 43	46 56	216 42	6	6.26	6
452	22	5	71	4707 .....	R.	..	14 44	65 55	....	..	..	..
453	5	6	73	4712 .....	R.	..	14 46	54 54	227 18	6	7.04	6
	19	7	81	" .....	H.	..	....	....	228 14	6	6.35	6
454	19	7	71	4714 .....	R.	..	14 48	63 2	144 31	4	22.47	4
455	21	7	79	4715 .....	H.	..	14 50	47 30	275 57	10	2.34	10
456	16	7	79	4719 .....	H.	..	14 51	53 23	40 18	10	22.95	10
457	8	7	72	4723 .....	R.	..	14 53	51 27	166 29	4	5.90	4
458	4	6	72	4728 $\pi$ Lupi .....	R.	..	14 57	46 33	100 3	..	0.57	..
	12	6	80	" .....	R.	..	....	....	99 18	10	0.90	10
	3	7	80	" .....	R.	..	....	....	....	..	..	..
	20	7	81	" .....	R.	..	....	....	....	..	..	..
459	16	5	71	4734 .....	R.	..	15 2	54 52	244e	..	12e	..
460	2	7	72	4739 $\zeta$ Lupi .....	R.	..	15 3	51 40	249 17	4	71.71	4
461	21	7	79	After 4739 $\kappa$ Lupi ....	H.	..	15 3	43 18	144 14	10	26.91	10

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
800	....	....	.....	Aperture 7 inches; definition rather poor.
500	....	....	.....	Aperture 5 inches; clouds stopped observations.
500	....	....	.....	Aperture 7 inches; $\alpha^2$ is $\frac{2}{3}$ the diameter of $\alpha^1$ .
800	....	....	.....	Aperture 7 inches; stars dancing and unsteady.
800	....	....	.....	Clouds hide $\alpha^2$ oftener than $\alpha^1$ ; $\alpha^2$ from $\frac{1}{2}$ to $\frac{3}{4}$ less brilliant than $\alpha^1$ ; aperture 5 inches; observations good; stars dancing.
800	....	....	.....	Aperture 6 inches; definition very good, some dancing.
800	....	....	.....	Telescope west.
800	....	....	.....	Telescope east.
800	....	....	.....	Aperture 5 inches; observations not good.
800	....	....	.....	Definition sometimes good, at others bad.
800	....	....	.....	Definition fair; aperture 6 inches; small star = $\frac{2}{3}$ diameter of large star.
800	....	....	.....	Aperture 8 inches.
....	....	....	.....	Bad definition; stopped observations.
800	....	....	.....	Aperture 7 inches; definition pretty good; $\alpha^2 = \frac{2}{3}$ of $\alpha^1$ diameter.
800	....	....	.....	Steady definition; full aperture.
159	....	....	.....	Diameter of large star $2^{\circ}5''$ .
159	....	....	.....	.....
800	1 14	....	Both yellow.	.....
159	1 1	....	.....	The ghost measured as well; pos. 188°52; distance, 5°01; magnitudes, 10 and 10; very hard and well defined.
580	....	....	.....	Good observations.
442	....	8 8	White.	.....
....	....	4 8	Faint yellow & orange	Stars moderately steady; very beautiful colours, but not a good night for observations.
159	....	4 9	.....	.....
443	159	9 9	Faint blue.	.....
444	....	8 8	.....	.....
445	....	6 7	Yellow and orange....	Very wide double.
446	....	7 11	.....	Not found.
447	....	8 9	.....	Seen; no remarkable change noticed.
....	159	8 9	.....	.....
448	....	5 17	Yellow	Companion just seen in glimpses; 16 or 17 magnitude large star yellow.
449	....	6 10	Yellow and blue	Definition middling.
450	....	8 0	Orange	Large star orange; companion not seen.
451	159	9 10	.....	.....
452	....	....	.....	Not found; foggy.
453	150	8 8	.....	.....
....	159	9 9	.....	.....
454	....	7 8	.....	Stars steady; definition middling.
455	159	7 8	.....	.....
456	159	9 9	.....	.....
457	....	7 11	Yellow and blue.	.....
458	280	5 5	.....	Elongated with 150 power; night not good for observations; distance = diam. of thick wire.
800	5 5	.....	.....	A beautiful double star.
800	....	.....	.....	Clearly divided; 11 $\frac{1}{2}$ inches aperture.
100, 200, 800.	....	.....	.....	100 power not round, 200 divides it, 800 makes it a wide double.
459	....	5 14	Yellow and blue.	.....
460	....	4 6	.....	.....
461	159	5 8	.....	.....



measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes	Colours.	Remarks.
462	....	6 0	.....	Companion not found.
463	....	8 11	Yellow.....	$\alpha$ and $d$ measured line points $2f$ following $g$ . See diagram.
	150	....	.....	Seen multiple ; nine stars.
464	....	9 $\frac{1}{2}$ 9 $\frac{1}{2}$	.....	Definition middling.
465	....	9 9	.....	Another star south following.
466	150	6 8	.....	
467	230	6 6	.....	Very fine double.
468	333	....	.....	Definition bad ; very difficult.
	333	6 6	.....	Seen well with 150 power.
	530	7 7	.....	Good observations.
469	150	8 10	.....	
470	....	9 9	.....	
471	150	10 10	.....	Bad definition ; though clear night.
472	150	9 9	.....	Definition and steadiness pretty good.
473	150	8 $\frac{1}{2}$ 8 $\frac{1}{2}$	.....	Foggy.
474	....	8 8 $\frac{1}{2}$	Both white .....	
475	150	8 8 $\frac{1}{2}$	.....	Very difficult, so faint.
476	....	10 11	.....	Moderately well defined, but not divided.
477	150, 230, 530	4 4	.....	
	450, 800, 1200	....	.....	Elongated in direction of motion ; smaller end goes first ; not divided.
	450, 1200	....	.....	Not divided ; ill-defined.
	1200	....	.....	Not elongated.
	800, 520, 150	....	.....	Not elongated.
	1200	....	.....	Seems elongated ; position about 270.
	530	....	.....	Not elongated with the highest power.
	800	....	.....	Round with various powers up to 800.
478	....	9 10	.....	Another in field with this.
	150	9 10	.....	
	150	7 8	.....	
479	150	5 8	.....	Much cirrus about.
480	....	8 8 $\frac{1}{2}$	.....	Definition pretty good.
	150	9 9	.....	
481	150	8 11	.....	Seen ; too windy to measure.
482	....	8 $\frac{1}{2}$ 9 $\frac{1}{2}$	.....	Very faint.
	....	....	.....	
483	....	7 10	Yellow-blue .....	Definition very middling.
484	150	8 11	.....	Clouds came over from the westward
485	150	8 8	.....	
486	....	7 7	.....	Definition horrible ; can only see position ; is about same as Herschel's.
	....	7 7	.....	First four observations definition good ; got worse at the last.
	150	7 7	.....	
487	150	9 9	.....	
488	150	9 12	.....	Viewed only ; night cloudy.
489	....	6 9	.....	Two other companions. See diagram.
	150	7 10	.....	Two more companions—14-14 magnitudes.
490	150	11 11	.....	Light wires ; very faint.
491	....	{ 7 9 7 9 }	.....	Reading of position only.
	150	7 9	.....	Third star 10th mag. ; clouds stopped observations.
492	150	9 10	.....	
493	150	10 10	.....	Light wires.
494	150	10 10 $\frac{1}{2}$	.....	
495	230, 150	7 9	Pale yellow and green	Definition bad.
	....	6 8	.....	Definition middling, but stars are steady.
	....	6 10	Yellow and blue .....	Definition bad ; thin clouds about
	150	7 10	.....	

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					F.	H.						
496	14	7	73	4815.....	R.	..	h. m.	° ' "				
497	22	6	72	4816.....	R.	..	15 45	50 0	7 43	4	1.58	4
498	5	6	73	4819.....	R.	..	15 49	66 20	.....	..	.....	..
499	27	8	80	4822.....	..	H.	15 51	38 49	90 24	6	7.41	6
500	18	8	79	After 4823.....	..	H.	15 52	38 5	21 2	10	7.06	10
501	1	9	80	4824.....	..	H.	15 54	45 56	243 30	6	9.69	6
502	19	7	71	4825.....	R.	..	15 53	57 26	249 15	5	10.32	5
503	2	9	80	4827.....	..	H.	15 56	44 3	167 51	6	14.06	6
504	2	8	71	4829.....	R.	..	15 56	59 44	172 53	6	8.17	6
505	30	5	72	After 4829 & Apodis.....	R.	..	16 2	78 21	12 56	4	102.36	4
506	19	8	79	4833.....	..	H.	16 1	46 1	.....	..	.....	..
507	3	8	71	4835.....	R.	..	16 3	53 55	79 36	6	9.80	6
508	24	8	80	4836.....	..	H.	16 10	34 35	299 36	6	4.17	6
509	14	8	79	4837.....	..	H.	16 4	43 23	73 20	10	8.60	10
510	19	8	81	4838.....	..	H.	16 5	49 50	134 45	6	23.75	6
511	18	8	80	4840.....	..	H.	16 10	34 35	297 20	6	4.76	6
512	29	8	81	4841.....	..	H.	16 11	49 54	359 52	6	20e	..
513	8	7	73	4844.....	R.	..	16 15	59 10	.....	..	.....	..
514	18	8	79	4846.....	..	H.	16 16	48 4	151 25	10	11.40	10
515	13	7	71	4847, Tri. Aust.....	R.	..	16 15	63 43	22 5	6	22.45	6
516	4	6	80	4849.....	R.	..	..	..	21 15	4	21.69	4
517	19	8	81	4850.....	..	H.	16 18	65 48	149 25	6	15.75	6
518	22	7	80	4851.....	..	H.	16 19	57 29	.....	..	.....	..
519	19	8	81	4852.....	..	H.	16 17	37 39	145 8	6	14.66	6
519	15	7	71	4853.....	R.	..	16 18	47 18	385 36	6	23.07	6
520	29	8	81	4854.....	..	H.	16 19	57 29	386 2	6	22.43	6
520	13	7	71	4854.....	R.	..	..	..	46 25	1	1.75	1
520	4	6	72	.....	R.	..	..	..	..	..	..	..
520	17	6	74	.....	R.	..	..	..	..	..	..	..
520	5	6	80	.....	R.	..	..	..	..	..	..	..
520	16	7	80	.....	R.	..	..	..	..	..	..	..
521	24	8	80	After 4854.....	..	H.	16 22	67 58	299 6	10	7.02	10
521	19	8	79	4855.....	..	H.	16 22	67 58	297 5	6	5.87	6
522	29	7	80	4857.....	R.	..	16 22	46 13	72 39	5	7.44	5
522	18	8	80	4858.....	..	H.	16 23	46 14	73 26	6	5.19	6
523	15	7	71	4858.....	R.	..	16 25	77 16	.....	..	..	..
524	13	7	71	4860.....	R.	..	16 27	79 27	.....	..	..	..
525	24	8	80	4861.....	..	H.	16 25	47 53	.....	..	..	..
526	22	6	72	4862.....	R.	..	16 26	61 19	179 55	4	10.88	4
526	19	8	79	4863.....	..	H.	16 28	53 33	121 7	6	3.48	6
527	1	9	80	4865.....	..	H.	16 28	53 33	121 7	6	3.48	6
528	20	7	72	4865.....	R.	..	16 31	83 49	.....	..	..	..
529	15	7	71	4866.....	R.	..	16 30	56 46	.....	..	..	..
529	10	8	71	4866.....	R.	..	16 29	56 46	124 8	6	3.80	6
529	14	8	73	4866.....	R.	..	16 29	56 46	.....	..	..	..
529	12	8	79	4866.....	..	H.	16 30	56 47	124 40	10	3.06	10
530	21	9	80	4867.....	..	H.	16 30	43 12	296 12	6	14.68	6

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
496	....	8 12	.....	Definition bad ; hazy.
497	....	....	.....	Companion seen ; too faint to measure ; seems unaltered.
498	....	10 12	.....	Seen ; no change apparent ; too faint to measure.
499	159	10 10	.....	
500	159	5 9	.....	
501	159	10 12	.....	
502	....	9 11	.....	
503	159	10 11	.....	Light wires.
504	....	8½ 8½	.....	Foggy night ; in the apex of a triangle. See diagram.
505	140	9 9	Light blue and red ..	The pair form apex of triangle.
506	....	6 6	Both yellow	Third star not seen ; bad night.
507	159	11 11	.....	Seen ; not measured.
508	159	9 9	.....	
509	159	9 12	Slight tinge of red ..	Another in field.
510	159	9 9	.....	No double in h.'s place ; this is same as 4840.
511	159	9 10	.....	
512	159	9 9½	.....	
513	....	6 12	.....	
514	159	10 11	.....	Seen ; too faint to measure ; no apparent change.
515	....	9 10	Light yellow and blue	Two other pairs in the field south of this.
516	....	7 12	Yellow and blue.	
517	159	7 11	.....	Seen ; no change apparent ; not measured.
518	159	8 11	11. m. blue.	
519	159	....	.....	Not found.
520	580	8 10	Both faint greenish yellow.	Light wires ; Herschel's position, 115° ; distance, 6".
521	800	6	.....	
522	300	....	.....	Not divided ; definition middling.
523	140,485	....	Orange yellow	Seen easily and measured with 230. It is just possible that some other pair than 4854 may have been seen on this occasion ; only one measure taken ; it was just looked at in passing.
524	800	....	.....	Not divided ; definition not good.
525	300	....	Yellow	Large star, suspected double but now proved single ; night very favourable.
526	159	6	.....	Looked carefully ; a single star in Herschel's place ; clear disc with all powers on 11½ refractor.
527	159	10 10	.....	No companion.
528	159	10 11	.....	Light wires.
529	....	8½ 10	White and reddish.	
530	159	8 10	.....	
531	....	9 18	.....	No companion found ; definition moderate.
532	159	6	.....	Too faint to measure ; position estimated same Herschel's.
533	....	9 9½	.....	No companion.
534	159	9 9½	.....	
535	159	9 10	.....	
536	....	8 0	.....	Two 8 magnitude stars here ; neither has a close com- panion ; the following star has two distant com- panions.
537	....	7	.....	Companion not seen.
538	159	6½ 7	Faint yellow	Definition very good.
539	140	7 7	.....	No apparent change.
540	159	8 8	.....	
541	159	7 10	.....	Very bad definition.



## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initials		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
531	21	9	80	4868.....	..	H.	h. m. 16 29	° ' 50 19	° ' 76 13	6	17.62	6
532	18	8	80	4874.....	..	H.	16 33	60 42	297 8	6	2.82	6
533	24	8	80	4885.....	..	H.	16 39	48 9	244 24	6	3.68	6
534	18	8	80	4889.....	..	H.	16 44	37 15	13 8	6	6.49	6
535	13	7	71	4890.....	R.	..	16 45	46 43	7 44	5	31.43	5
									147 13			
536	29	8	81	4892.....	..	H.	16 46	41 35	290 23	6	8.34	6
537	13	7	71	4896.....	R.	..	16 47	46 40	23 41	6	4.50	6
538	18	8	80	4899.....	..	H.	16 49	45 45	275 22	6	3.19	6
539	11	8	71	4901.....	R.	..	16 51	58 40	131 1	6	3.06	6
	20	6	73	".....	R.	..	....	....	132 15	6	3.29	6
540	27	6	72	4904.....	R.	..	16 54	75 14	183 31	4	7.11	4
541	27	6	72	After 4904.....	R.	..	16 52	54 57	62 29	4	33.17	4
542	30	8	81	4906.....	..	H.	16 53	48 45	....	..	..	..
543	1	9	80	4908.....	..	H.	16 54	39 33	176 55	6	4.15	6
544	1	8	71	4909.....	R.	..	16 53	50 54	103 51	3	16.38	3
	22	7	72	".....	R.	..	....	....	104 8	4	16.86	4
									241 9	4	12.43	4
									239 3	4	29.38	4
	29	7	72	".....	R.	..	....	....	189 6	2	49.32	2
									104 55	2	..	..
	16	7	80	".....	R.	..	16 55	50 56	104 20	..	22.68	..
									158	..	..	..
	22	7	80	".....	..	H.	16 53	51 5	243 33	6	18.85	6
545	19	7	71	4914.....	R.	..	16 58	72 33	105 29	4	15.52	4
	14	8	79	".....	..	H.	....	....	75 56	6	3.62	6
546	18	8	79	4916.....	..	H.	16 59	49 20	77 34	10	2.47	10
547	31	7	72	4917.....	R.	..	17 0	54 12	276 35	10	9.47	10
548	24	7	71	After 4917.....	R.	..	17 0	67 4	....	..	..	..
549	15	7	71	4919.....	..	H.	17 1	46 36	340 55	7	27.91	7
	2	9	79	".....	..	H.	....	....	165 12	6	8.10	6
550	14	8	71	4920.....	R.	..	17 2	58 26	165 27	10	7.30	10
	21	6	73	".....	R.	..	....	....	326 39	6	3.15	6
551	4	10	80	4926.....	..	H.	17 6	39 37	333 6	5	3.00	5
552	4	10	80	4928.....	..	H.	17 8	38 26	....	..	..	..
553	2	8	71	4930.....	R.	..	17 9	54 14	301 0	6	12.96	6
554	2	8	71	4931.....	R.	..	17 9	59 18	44 50	4	9.04	4
	21	6	73	".....	R.	..	....	....	254 36	4	2.22	4
									259 6	5	..	..
	23	6	73	".....	R.	..	....	....	257 7	6	0.57	1
	19	8	79	".....	..	H.	....	....	257 29	10	1.00	10
555	25	8	77	4935.....	R.	..	17 11	34 51	224 23	4	1.97	4
									132 23	..	..	..
556	4	10	80	4936.....	..	H.	17 12	45 58	77 28	6	6.23	6
557	31	7	72	4938.....	R.	..	17 12	56 20	....	..	..	..
558	22	6	72	4942 $\gamma$ Arae.....	R.	..	17 15	56 18	329 23	6	16.65	6
559	20	9	81	4944.....	..	H.	17 16	47 2	167 32	6	13.08	6
560	2	9	80	4949.....	..	H.	17 18	45 45	263 11	6	1.82	6
561	19	9	81	4953.....	..	H.	17 19	43 50	170 12	6	13.25	6
562	2	9	80	4957.....	..	H.	17 23	46 30	270e	..	1e	..
563	1	9	81	4959.....	..	H.	17 26	54 34	....	..	..	..
	7	9	81	".....	..	H.	"	"	....	..	..	..

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
531	159	9 10	.....	Declination differs from Herschel's h 50° 5'.
532	159	10 10	.....	
533	159	8 9	.....	Triple. See diagram.
533	159	8 8	.....	
534	159	6 9	.....	A pair, 10-10 magnitudes, position 150°e; follows this in 11s.; in a field 80s. diameter I see 20 stars from 9 mag. downwards; H. said there were none.
535	.....	8 9	.....	
536	159	9 11	.....	North, preceding a cluster.
537	159	8 9	.....	
538	159	10 10	.....	Bright wires.
539	.....	8 8	Both white.	
540	150	8 8	.....	A 6 magnitude star, south following.
541	.....	8 9	.....	Definition only middling; no third star seen.
541	11 or 11½	8 9	Ruby red and blue	Two stars seen, but no companion; night pretty good, but discs of stars too large.
542	159	.....	.....	Not found.
543	159	10 10	.....	In a cluster.
544	.....	8 8	Both blue	Base of the pentagon.
.....	.....	8 8½	.....	Definition bad; observations very difficult; five stars forming a pentagon.
.....	.....	8 11	.....	{ a to d } f is too faint to measure, distance estimated
.....	.....	8 11	.....	{ a to f } as one-tenth more than from a to d. See
.....	.....	8 11	.....	{ d to e } diagram.
.....	.....	11 12	.....	{ d = 11 magnitude.
.....	.....	.....	.....	{ f = 11 "
.....	.....	.....	.....	{ e = 12 "
.....	.....	.....	.....	{ c = 12 "
.....	.....	8 8	.....	Pos. 158° = a to c.
.....	159	8 10	.....	b to c.
.....	159	8 8	.....	a to b.
545	.....	.....	.....	Magnitudes doubtful; very bad definition.
546	159	9 9	.....	Foggy.
547	159	9 9	.....	
548	.....	8 0	Orange yellow	No companion seen.
548	.....	6 9	Yellow and blue.	
549	.....	7 8	.....	Ill-defined, but steady.
550	159	8 9	.....	
550	.....	8 10	Faint yellow and blue	Bad light.
551	.....	8 9	White and blue	Fine and clear cold night.
552	159	9 10	.....	Seen.
553	.....	9 10	.....	
554	.....	8 8	.....	
.....	140, 333	.....	.....	Clouds passing; definition very bad.
.....	240	.....	.....	Angle about 260°; seen elongated with 140 power;
.....	159	9 9	.....	not divided with 333.
.....	.....	.....	.....	Seen clearly divided with 140.
555	.....	{ 6 7 }	.....	{ Second position observation is of a distant companion; large star is a close double; 24 Aug., '77. R 298. See diagram.
555	.....	{ 6 7 }	.....	
556	159	9 10	.....	
557	.....	8 8½	.....	Seen; no change noticed.
558	.....	3 12	.....	Very ill-defined; third star seen in glimpses; position about 60°.
559	159	10 10	.....	
560	159	6 6½	.....	
561	159	7 9	.....	
562	159	11 11	.....	
563	159	.....	.....	Not found; definition very bad.
563	159	.....	.....	Not found.

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
564	7	9	81	4961.....	..	H.	h. m. 17 28	° ' 59 52	' " 151 33	6	16.40	6
565	20	6	73	4965.....	R.	..	17 29	51 5	232 36	6	13.97	6
566	1	9	81	4966.....	..	H.	17 30	34 56	..	..	12e	..
567	19	9	81	4969.....	..	H.	17 32	53 56	48 52	6	15.92	6
568	19	9	81	4970.....	..	H.	17 33	48 35	70 49	6	7.22	6
569	7	9	81	4973.....	..	H.	17 36	45 12	26 58	6	12.09	6
570	20	7	71	4975.....	R.	..	17 38	55 22	..	..	..	..
571	26	7	80	" .....	R.	..	..	..	..	..	..	..
	30	7	80	" .....	..	H.	..	..	..	..	..	..
	7	9	81	" .....	..	H.	..	..	..	..	..	..
	16	9	81	" .....	..	H.	..	..	..	..	..	..
571	19	9	81	4978 <i>ν</i> Arae .....	..	H.	17 41	53 30	276 30	6	11.85	6
572	7	9	81	4984.....	..	H.	17 43	52 24	7 20	6	11.85	6
573	16	9	81	4985.....	..	H.	17 44	62 57	264 18	6	20.39	6
574	5	8	72	4992.....	R.	..	17 47	57 40	5 22	5	5.18	5
	2	9	79	" .....	..	H.	..	..	11 12	9	4.31	10
575	19	7	71	4994.....	R.	..	17 47	52 12	29 0	4	13.87	4
576	15	8	71	4996.....	R.	..	17 49	62 11	..	..	..	..
577	20	7	71	4998.....	R.	..	17 51	56 56	..	..	..	..
578	26	7	71	4999.....	R.	..	17 53	75 14	173 22	6	12.87	6
579	16	9	81	5004.....	..	H.	17 54	42 5	298 45	6	12.08	6
580	15	8	71	5006.....	R.	..	17 54	59 13	..	..	..	..
581	15	8	71	5008.....	R.	..	17 59	66 25	..	..	..	..
582	13	8	73	" .....	R.	..	..	..	..	..	..	..
582	13	8	79	5014.....	..	H.	17 58	43 24	90e	..	..	..
	16	6	80	" .....	R.	..	..	..	79 18	10	0.81	8
583	3	9	80	5023.....	..	H.	18 2	40 28	277 32	6	5.85	6
584	24	7	71	5024.....	R.	..	18 3	63 8	7 4	6	41.62	6
585	20	7	71	5027.....	R.	..	18 3	54 25	84 42	6	12.98	6
	16	9	81	" .....	..	H.	..	..	91 52	6	11.42	6
586	15	8	71	5029.....	R.	..	18 4	57 58	113 11	6	2.93	6
	2	9	79	" .....	..	H.	..	..	112 18	10	1.99	10
587	11	9	73	5038.....	R.	..	18 11	71 53	303 46	5	11.81	5
588	3	8	71	5041.....	R.	..	18 16	53 43	253 35	4	3.27	4
	14	8	73	" .....	..	H.	..	..	259 52	8	3.11	8
	3	9	80	" .....	..	H.	..	..	264 52	6	1.82	6
589	7	10	80	5044.....	..	H.	18 22	55 35	356 46	6	13.80	6
590	26	9	81	5046.....	..	H.	18 23	48 20	75 8	6	6.24	6
591	5	8	72	5048 <i>γ</i> Pavonis.....	R.	..	18 28	71 33	355 10	1	49.75	1
592	18	7	71	5053.....	R.	..	18 33	55 53	216 55	6	3.21	6
	6	8	80	" .....	..	H.	..	..	225e	..	30e	..
593	4	8	71	5054.....	R.	..	18 33	47 47	..	..	15e	..
	26	9	81	" .....	..	H.	..	..	326 52	6	16.17	6
594	26	7	71	5055.....	R.	..	18 33	52 59	73 54	6	7.76	6
595	18	7	71	5056.....	R.	..	18 35	55 48	196 45	3	32.57	3
596	29	9	81	5057.....	..	H.	18 35	53 57	130 57	6	2.30	6
597	27	7	72	5059.....	R.	..	18 38	49 46	..	..	..	..
	29	7	72	" .....	R.	..	..	..	..	..	..	..
598	4	8	71	5060.....	R.	..	18 39	50 34	..	..	..	..
599	29	7	72	5065.....	R.	..	18 41	58 5	22 4	4	22.15	4
600	26	9	81	5066.....	..	H.	18 43	41 9	86 32	6	9.32	6
601	28	10	80	5067.....	..	H.	18 44	51 5	276 23	6	2.43	6
602	20	9	81	5068.....	..	H.	18 44	54 27	0 51	6	10.81	6
603	4	8	71	5069.....	R.	..	18 45	61 59	..	..	..	..
	10	8	71	" .....	R.	..	..	..	..	..	..	..

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
564	150	10 10	.....	A 10 magnitude star north following. Too ill-defined to measure.
565	.....	8 8	.....	
566	.....	8 8	.....	Companion not seen; definition bad. Looked carefully; a 7 magnitude star in a wide cluster; no companion.
567	150	8 10	.....	
568	150	8 10	.....	A 6 magnitude star seen; no companion. Not divided; night is very bad.
569	150	8 9	.....	
570	.....	6 0	.....	Round with the highest power; a 9 magnitude star north preceding.
.....	7	0	.....	
.....	150	6	.....	Night is too bad to continue observing.
.....	150	6	.....	
.....	580	6	.....	Very pretty and well defined.
571	150	7 11	.....	
572	150	8 10	.....	Stars are very faint. Companion not found; definition bad.
573	150	9 10	.....	
574	150	9 9½	Yellow	Companion not found; definition bad. Definition moderate; stars rather unsteady.
.....	150	8 9	.....	
575	.....	10 11	.....	Companion not seen; 6½ magnitude star north preceding; bad definition.
576	150	9 0	.....	
577	.....	.....	.....	Companion only visible by oblique vision, if at all. Seen elongated; position about 90°; definition bad.
578	150	8 9	.....	
579	150	9 10	.....	Wire between them does not cover from centre to centre.
580	150	6 0	.....	
581	150	9 0	.....	Can just see to measure this. Measured with difficulty; 9 magnitude; star is hazy.
.....	9	0	Orange red	
582	150	6 6	.....	Difficult; definition pretty good; light bad.
.....	800	.....	.....	
583	150	8 8	.....	Fine clear night. Difficult; bad definition.
584	.....	5 11	Yellow	
585	.....	8½ 9	.....	Definition at times very bad.
.....	150	9 10	.....	
586	150	8 8	.....	A coarse double star; Herschel gives no position or distance.
.....	150	8 8	.....	
587	.....	9 10	.....	Definition horrible, though night looks splendid. Nearly in the same field with 5053.
588	.....	7 9	.....	
.....	150	7 9	.....	No. 7 magnitude star with a companion seen here; bad night.
.....	150	7 10	.....	
589	150	10 10	.....	No companion found; must be less than 12 magnitude Not found.
590	150	10 10	.....	
591	.....	5 12	Orange and blue.	Definition good.
592	150	7 9	.....	
.....	150	7 10	.....	Saw the small star in glimpses; could not see the large star double.
593	.....	10 11	.....	
.....	150	9 10	.....	Seen elongated towards small companion. See diagram.
594	150	9 9	.....	
595	150	6 10	.....	.....
596	150	11 11	.....	
597	.....	.....	.....	.....
.....	.....	.....	.....	
598	.....	.....	.....	.....
599	150	7 10	.....	
600	150	6 10	.....	.....
601	150	10 11	.....	
602	150	9 11	.....	.....
603	.....	8 12	.....	
.....	.....	.....	.....	.....

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination South.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc.	No. of observa- tions of distance.
					R.	H.						
							h. m.	° ' "	° ' "			
603	11	8	71	5089.....	R.	..	....	....	{ 88e 88 0	6	0.50e 16.04	6
	1	8	81	..	..	..	....	....	88 7	6	0.65	6
604	24	7	71	5075.....	R.	..	18 52	63 59	110 7	6	2.05	6
	23	9	79	..	H.	..	....	....	107 14	2	1.54	2
	9	8	80	..	H.	..	....	....	108 35	6	1.64	6
605	30	9	80	5077.....	..	H.	18 55	36 27	96 17	6	7.49	6
606	20	9	81	5078.....	..	H.	18 54	45 49	212 50	6	18.46	6
607	25	9	79	5080.....	..	H.	18 54	36 24	248 15	10	4.88	10
608	16	6	80	5084 γ Cor. Aust.....	R.	..	18 59	37 18	53 8	8	1.15	8
	3	9	80	..	..	H.	....	....	52 22	6	1.32	6
609	6	8	72	5085.....	R.	..	18 59	60 16	239 26	4	3.30	4
610	15	8	71	4092.....	R.	..	19 4	47 34	351 0	6	18.20	6
	2	9	80	..	..	H.	....	....	350 34	6	18.68	6
611	30	9	80	5088.....	..	H.	19 7	36 27	254 48	7	5.48	6
612	10	9	72	5099.....	R.	..	19 7	50 12	37 18	4	12.30	4
613	14	8	71	5100.....	R.	..	19 8	56 22	170e	..	20e	..
614	29	7	72	5108.....	R.	..	19 12	72 1	....	..	..	..
	3	9	72	..	R.	..	....	....	....	..	..	..
615	21	9	80	5104.....	..	H.	19 12	51 16	88 55	6	17.32	6
616	30	9	79	5107.....	..	H.	19 14	44 46	78 28	10	27.76	10
617	10	8	71	5109.....	R.	..	19 17	67 36	14 55	4	36.73	4
				..	..	..	....	....	141 3	6	23.04	6
618	15	9	73	5114.....	R.	..	19 18	54 34	262 29	4	67.75	4
619	29	9	81	5115.....	..	H.	19 19	40 7	95 38	2	70.55	2
620	29	9	79	5117.....	..	H.	19 20	44 12	65 2	6	9.27	6
621	3	9	80	5123.....	..	H.	19 24	66 41	265 15	10	5.61	10
622	20	8	71	5125.....	R.	..	19 24	50 11	4 36	6	25.68	6
623	1	10	79	5129.....	..	H.	19 30	47 7	293 3	6	29.08	6
624	16	9	73	5132.....	R.	..	19 31	66 35	115 16	10	14.39	10
				..	..	..	....	....	309 23	6	22.08	6
625	12	8	80	..	..	H.	....	....	300e	..	20e	..
626	14	10	81	5138.....	..	H.	19 35	44 35	36e	..	12e	..
	26	7	72	5140.....	R.	..	19 38	65 13	84 34	4	2.41	4
	29	7	72	..	R.	..	....	....	83 30	4	2.30	4
	25	9	79	..	..	H.	....	....	85 7	10	1.52	10
	1	11	80	..	..	H.	....	....	83 13	6	1.76	6
627	10	9	72	5141.....	R.	..	19 38	62 9	344 38	4	13.28	4
628	14	10	81	5143.....	..	H.	19 39	46 44	318 59	6	7.37	6
629	9	10	71	After 5149.....	R.	..	19 42	55 22	147 5	4	22.74	4
630	7	8	73	5158.....	R.	..	19 52	74 56	....	..	..	..
631	2	10	79	5159.....	..	H.	19 52	40 57	33 30	10	23.56	10
632	3	9	72	5162.....	R.	..	19 55	71 9	....	..	..	..
	10	9	72	..	R.	..	....	....	292 25	6	6.09	6
	18	8	73	..	R.	..	....	....	292 12	6	7.10	6
633	26	8	71	5163.....	..	R.	19 54	63 30	247 48	6	1.57	6
	10	9	73	..	R.	..	....	....	245 48	4	2.15	4
634	14	10	81	5166.....	..	H.	19 57	47 11	....	..	..	..
635	11	9	73	5167.....	R.	..	20 1	64 0	34 39	6	7.61	6
	29	9	79	..	..	H.	....	....	33 30	10	6.48	10
	29	9	81	..	..	H.	....	....	34 0	6	6.33	6

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying Power used.	Magnitudes.	Colours.	Remarks.
159, 230, 580	{ 8 8 8 12	.....		{ Very difficult; large star, double; estimated position 88°; distance 0.5" by diameter of wire; nearly always looks nebulous.
604	580 9 9	.....		Small star not seen.
.....	8 8	.....		Very difficult; looks like oval nebula, with two star points; definition bad; the nearest star is one of a small triangle; seems strange Herschel did not say so.
159	8 8	.....		Blurred.
605	159 7 7	.....		
159	9 10	.....		
606	159 9 10	.....		Herschel's position angle, 313.4°; the large star is double; position 237° 16'; distance 1.00"; 9 and 10 magnitude. R. 317.
607	159 8 10	.....		
608	800	.....		Very close star; definition middling.
.....	333 6 6	.....		
609	..... 8 10	.....		Pretty cluster. Herschel's 3778 north following.
610	159 8 8	.....		
.....	159 8 8	.....		
611	159 10 10	.....		
612	159 9 13	.....		Sky very white.
613	..... 14	.....		Companion only seen in glimpses in a dark field; not measured.
614	.....	Yellow	.....	No companion seen.
.....	.....	.....		No companion seen; definition bad.
615	159 9 9	.....		Definition bad.
616	159 5 7	.....		
617	..... 8 10	Yellow and blue	.....	{ Sky very black. See diagram.
.....	8 10	Both yellow	.....	
618	140, 230 { 7 12	Bluish white	.....	{ Definition is bad. See diagram.
619	159 9 9	.....		
620	159 8 9	.....		
621	159 9 9	.....		
622	..... 9 9	.....		Stars unsteady, but well defined.
623	159 9 9	.....		Light clouds.
624	..... 8 10	.....		About 180° different from Herschel's position; no other double near here.
.....	159 8 10	.....		Herschel's position 180° wrong.
625	159 10 12	.....		Seen.
626	..... 8 8	.....		Very bad definition.
.....	.....	.....		Calm, dark, and thick night; stars seem to have only half their usual light.
.....	159 8 8	.....		
627	159 8 8	.....		Cirrus very thick.
628	159 8 12	.....		
629	..... 10 11	.....		
.....	8 8 1/2	Yellow and greenish yellow.	.....	Very pretty object; stars are nearly the same colour; the smaller has a tinge of green.
630	..... 10 10	.....		Only just visible with lamp-light; too faint to measure; no change apparent.
631	159 9 9 1/2	.....		
632	..... 8 11	.....		Not seen.
.....	8 11	.....		Five stars in an elliptic arc precede this double star.
.....	140 8 10	.....		Preceded by an elliptic arc.
633	435 8 9	.....		Very hazy; definition very middling.
140, 230 8 8 1/2	.....	.....		Very difficult; the night is hazy and thick.
634	159 6 10	.....		Seen.
635	..... 8 9	.....		Definition very bad.
.....	159 8 9	.....		
.....	159 9 10	.....		

## DOUBLE Stars observed and

No. of star in this catalogue.	Day of the month.	Month of the year.	Year in the 19th Century.	Herschel's number and name.	Observer's initial.		Approximate R.A.	Declination south.	Position angle in degrees and minutes.	No. of observations of position angle.	Distance in seconds of arc	No. of observa- tions of distance.
					R	H						
636	8	8	73	5171.....	R.	..	h. m. 20 3	64 49	295 49 325 53	4	17-82	4
637	3	9	72	5177.....	R.	..	20 5	57 21	..	4	28-05	..
	28	8	73	"	R.	..	....	....	27 55	6	8-62	6
	25	9	79	"	..	H.	....	....	27 33	10	6-72	10
638	26	9	81	5178.....	..	H.	20 6	34 24	7 25	6	2-09	6
639	30	9	79	5179.....	..	H.	20 7	46 29	135 24	10	5-11	10
640	10	10	79	After 5184	..	H.	20 10	40 45	109 40	10	9-38	10
641	13	10	79	5186.....	..	H.	20 16	77 38	97 21	10	7-09	10
642	6	10	70	5192.....	R.	..	20 20	87 35	147 32	8	17-71	8
	11	8	71	"	R.	..	....	....	147 37	6	18-53	6
	2	10	79	"	..	H.	....	....	325 31	7	18-18	7
643	15	9	73	5193.....	R.	..	20 17	57 7	331 12	4	17-02	4
	2	11	80	"	..	H.	....	....	334 37	6	16-27	6
644	3	10	71	"	R.	..	20 18	69 32	249 8	7	4-29	7
645	1	11	80	5194.....	..	H.	20 19	36 50	237 14	6	6-13	6
646	3	7	72	5198.....	R.	..	20 20	13 36	144 21	4	4-52	4
647	6	10	70	ρ Capricorni After 5201	R.	..	20 23	75 48	16 36	10	18-68	5
	3	10	71	"	R.	..	....	....	16 5	4	17-60	4
	23	9	79	"	..	H.	....	....	16 31	10	17-14	10
648	30	9	79	5204.....	..	H.	20 24	45 50	31 18	10	5-42	10
649	19	10	78	5209 α Indi	R.	..	20 29	47 45	190e	..	0-70e	..
650	29	9	79	5214.....	..	H.	20 38	75 45	..	..	..	..
	14	10	79	"	..	H.	....	....	312 33	10	21-97	10
	26	7	80	"	..	H.	....	....	315 14	6	19-77	6
651	7	10	80	5216.....	..	H.	20 38	38 0	202 24	6	15-00	6
652	19	10	78	5221.....	R.	..	20 41	66 10	49 18	2	10-29	2
653	10	9	73	5222.....	R.	..	20 41	62 55	93 59	6	8-38	6
	22	9	79	"	..	H.	....	....	96 54	10	2-21	10
	12	8	80	"	..	H.	....	....	90e	..	4e	..
654	14	10	79	5224.....	..	H.	20 42	84 17	165 31	10	19-96	10
655	11	9	73	5231.....	R.	..	20 47	70 54	113 55	6	7-82	6
656	10	10	79	5232.....	..	H.	20 47	56 27	9 27	10	24-44	10
657	26	10	81	5233.....	..	H.	20 48	34 36	..	..	..	..
658	26	8	71	5235.....	R.	..	20 56	84 48	85 35	6	4-05	6
	30	9	79	"	..	H.	....	....	90 16	10	2-32	10
	13	10	79	"	..	H.	....	....	84 45	10	2-51	10
659	22	9	80	5236.....	..	H.	20 50	38 10	309 16	6	5-01	6
660	14	10	79	5238.....	..	H.	20 53	44 55	12 56	10	36-58	10
661	29	9	79	After 5238	..	H.	20 54	48 35	74 56	10	57-47	10
662	12	9	73	5243.....	R.	..	20 58	57 32	95 55	4	24-70	4
663	1	9	71	5245 ? 5235	R.	..	20 56	84 48	..	..	..	..
	18	8	73	"	R.	..	....	....	261 59	6	3-33	6
	16	9	73	"	R.	..	....	....	264 49	6	3-73	6
	27	5	80	"	R.	..	....	....	266 27	6	3-86	6
	23	5	80	"	..	H.	....	....	266 47	10	2-62	10
	26	7	80	"	..	H.	....	....	260e	..	3e	..
	9	8	80	"	..	H.	....	....	..	..	..	..
664	15	10	73	5246.....	R.	..	21 1	55 5	129 3	6	3-82	6
	5	10	78	"	R.	..	....	....	120 32	4	..	..
	19	10	78	"	R.	..	....	....	122 6	6	3-62	4
	13	10	79	"	..	H.	....	....	121 29	10	2-23	10
665	10	10	79	5247.....	..	H.	21 2	49 26	187 59	10	27-50	10
666	1	9	71	5250.....	R.	..	21 6	64 11	..	..	..	..
	2	9	71	"	R.	..	....	....	305 36	6	9-71	6

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
636	....	7 10	} .....	Definition bad. See diagram.
637	....	7 10		Not seen; air very thick; definition not good.
	140	9 9	.....	Definition good.
	159	8 9	.....	
638	159	7 10	.....	Very clear.
639	159	10 10	.....	
640	159	8 8	.....	
641	159	9 9½	.....	
642	230	7 8	.....	Herschel's position, 329° 21'; distance, 17"; magnitude, 8.8. Stars equal angle taken either way.
	....	8 8	.....	Stars dancing.
	159	8 8	.....	Clouds stopped observations.
643	....	7 10½	.....	Follows $\alpha$ Pavonis, not red.
	159	10 11	.....	
644	....	7 13	.....	Beautiful, but difficult; definition pretty good.
645	159	9 10	.....	Light wires.
646	....	6 9½	.....	This is 2099 in h's measures; h's angle 177°.
647	....	7 7½	.....	Clear moonlight; Herschel's position, 17° 28'; distance, 18.66"
	....	7 7½	Both yellow .....	Quite as bright as Herschel's 5194.
	159	7 8	.....	Indistinct.
648	159	8 9	.....	
649	....	8 16	.....	Estimated.
650	159	8 9	.....	Seen; not measured; distance, 30".
	159	8 10	.....	
	159	8 10	.....	
651	159	9 9	.....	
652	....	10 10	.....	Observed at Woodford, 2200 feet above sea.
653	140	6½ 6½	Both white .....	Fine double; definition good.
	159	6 6	.....	
	159	7 7	.....	Bad definition.
654	159	5 9	.....	
655	....	8 8	.....	Fine double.
656	159	9 10	.....	
657	159	....	.....	Not found.
658	....	8 8	.....	Seems to be the same as h. 5245.
	159	8 8	.....	
	159	8 8	.....	
659	159	10 10	.....	Haze about.
660	159	9 9	.....	
661	159	6 6	.....	
662	140	10 11	.....	Very faint; only just measurable.
663	....	8 8	.....	Looked carefully; not found; definition bad.
	....	8 8	.....	A fine pair; think Herschel's position must be wrong; declination 30' too great; or 5235 and 5245 are same star, unless one of those H. saw has since closed up.
	....	7½ 7½	Both white .....	Ill-defined; light hot wind.
	250	8 8	.....	An 8 magnitude star follows north.
	159	8 8	.....	
	159	9 9	.....	Same as Herschel's 5235.
	159	....	.....	Not found in H.'s position.
664	140	8 8	.....	Definition very bad.
	....	....	.....	
	....	....	.....	
	159	8 8	.....	
665	159	8 9	.....	
666	....	8 9	.....	Seen; definition so bad it is useless trying to measure.
	....	8½ 9	Straw yellow and blue.	



## DOUBLE Stars observed and

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					R.	H.						
667	21	10	79	5254.....	R.	H.	h. m.	° ' "	° ' "	"	"	"
668	27	9	70	5256.....	R.	H.	21 8	40 4	182 44	10	57.36	10
	9	8	80	.....	R.	H.	21 11	60 49	152 38	4	30.9	4
669	26	10	81	5257.....	R.	H.	21 11	51 11	160e	6	20e	6
670	27	9	70	5258 $\theta$ Indi.....	R.	H.	21 12	53 58	276 43	6	13.02	6
	3	10	71	".....	R.	H.	.....	.....	296 47	6	3.72	6
	14	10	73	".....	R.	H.	.....	.....	288 14	6	3.85	6
	3	10	78	".....	R.	H.	.....	.....	285 56	6	4.76	6
	12	8	80	".....	R.	H.	.....	.....	288 50	10	4.68	6
671	28	9	70	5260.....	R.	H.	21 13	72 20	289 33	6	3.68	6
672	28	9	70	5261.....	R.	H.	21 17	86 24	201 48	4	5.60	4
	29	10	79	".....	R.	H.	.....	.....	203 43	10	4.18	10
673	26	10	81	5267.....	R.	H.	21 18	45 35	.....	.....	.....	.....
674	11	10	71	5270.....	R.	H.	21 19	60 44	40e	.....	12e	.....
675	14	10	81	5274.....	R.	H.	21 23	35 19	148 50	6	22.91	6
676	9	10	71	5278 $\lambda$ Octantis.....	R.	H.	21 31	83 20	81 21	5	3.13	5
	20	10	73	".....	R.	H.	.....	.....	79 1	4	3.36	4
677	26	10	80	5286.....	R.	H.	21 35	58 23	88 46	6	6.97	6
678	27	10	79	5288.....	R.	H.	21 35	38 39	57 11	10	19.37	10
679	20	9	80	5289.....	R.	H.	21 37	81 8	47 44	6	14.89	6
680	13	10	73	5292.....	R.	H.	21 37	85 20	.....	.....	.....	.....
	20	10	73	".....	R.	H.	.....	.....	152 26	4	5.27	4
681	20	10	73	5294.....	R.	H.	21 35	60 48	192 54	1	.....	.....
	21	10	73	".....	R.	H.	.....	.....	191 1	6	8.51	6
	14	14	79	".....	R.	H.	.....	.....	189 4	10	7.39	10
682	26	10	81	5295.....	R.	H.	21 40	47 46	2 47	4	39.79	4
683	21	10	79	5299.....	R.	H.	21 47	40 39	241 34	10	41.83	10
684	21	10	70	5301.....	R.	H.	21 48	77 56	204 22	10	11.01	10
685	10	11	80	5302.....	R.	H.	21 49	53 36	348 31	6	12.68	6
686	26	10	81	5303.....	R.	H.	21 49	43 6	47 51	6	24.66	6
687	22	9	80	5305.....	R.	H.	21 49	41 38	246 17	6	19.30	6
688	7	11	79	5308.....	R.	H.	21 50	46 9	313 36	10	13.38	10
689	26	10	80	5309.....	R.	H.	21 49	51 37	167 21	6	8.07	6
690	24	11	80	5315.....	R.	H.	21 59	38 15	152 39	6	22.52	6
691	15	10	73	5316.....	R.	H.	21 58	59 45	145 26	6	5.02	6
692	5	9	70	5318.....	R.	H.	22 6	81 7	117 54	10	9.14	5
	20	9	80	".....	R.	H.	.....	.....	120 27	6	8.68	6
693	10	10	79	5319.....	R.	H.	22 4	38 55	.....	.....	.....	.....
	12	11	79	".....	R.	H.	22 5	39 4	117 43	10	1.60	10
694	6	10	70	5323.....	R.	H.	22 10	61 28	24 44	13	26.41	13
	4	10	71	".....	R.	H.	.....	.....	24 39	3	26.73	3
	27	10	79	".....	R.	H.	.....	.....	24 9	10	25.67	10
695	29	10	79	5325.....	R.	H.	22 14	73 33	88 50	10	18.74	10
696	19	10	78	5326.....	R.	H.	22 12	37 19	.....	.....	.....	.....
	30	11	80	".....	R.	H.	.....	.....	298 45	6	6.74	6
697	9	10	73	After 5326.....	R.	H.	22 14	70 38	.....	.....	.....	.....
698	7	12	80	5327.....	R.	H.	22 15	65 44	127 16	6	24.60	6
699	28	10	80	5328.....	R.	H.	22 15	65 45	.....	.....	.....	.....
700	11	11	80	5331.....	R.	H.	22 18	63 38	1 59	6	14.91	6
701	10	10	71	5334 $\delta$ Tucani.....	R.	H.	22 18	65 40	283 19	6	6.78	6
	7	10	73	".....	R.	H.	.....	.....	286 34	6	6.76	6
	28	10	80	".....	R.	H.	.....	.....	280e	.....	.....	.....
702	24	11	81	5335.....	R.	H.	22 18	45 55	.....	.....	.....	.....
703	28	9	70	5338.....	R.	H.	22 20	52 25	.....	.....	.....	.....
704	10	10	71	After 5338 $\delta$ Gruis.....	R.	H.	22 22	44 28	213 42	2	60.61	2
	11	11	79	".....	R.	H.	.....	.....	212 37	10	60.94	10

measured at Sydney Observatory—*continued*.

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
667	159	8 9	.....	A very pretty double in the field with this. R. 329. Another double in the field north preceding.
668	159	8 8	.....	
669	159	9 9	.....	
669	159	9 10	.....	
670	230	6 10	.....	Small star west ; good definition.
	140	5 9	.....	Stars are unsteady.
		6 7½	.....	
	159	5 9	.....	No third star seen ; definition bad.
671	.....	6 12	.....	Carefully examined ; companion not seen.
672	.....	9 9	.....	Definition middling.
	159	8 8	.....	
673	159	.....	.....	Not found ; a 7 and 9 magnitude wide pair 180°e ; seen at 46° 30' S. Dec.
674	.....	9 11	.....	
675	159	9 9	.....	
676	150, 230	5 8	.....	Clouds came up.
		6½ 9	Both yellow	Splendid definition ; calm, clear.
677	159	9 11	.....	
678	159	8 9	.....	
679	159	9 10	.....	
680	.....	8 10	.....	Companion not seen ; definition very bad.
	.....	10 11½	.....	Only just able to measure this.
681	.....	10 11	.....	Clouds interrupted observations.
	.....	11 11	.....	Very faint and difficult, only just able to measure it.
	159	10 10	.....	
682	580	5 9	.....	
683	159	8 8	.....	
684	320	8 11	.....	Windy ; bad definition ; Herschel's position, about 203° ; distance, 12" ; magnitudes, 9—10.
685	159	8 11	.....	
686	159	9 10	.....	
687	159	9 9	.....	Fog stopped observations.
688	159	9 9	.....	
689	159	10 10	.....	
690	159	9 9	.....	Scud stopped work.
691	150	9 10	.....	The northern of two stars.
692	.....	9 9	.....	High wind ; points a little north of ε Octantis.
	159	9½ 9½	.....	Points to a 5th magnitude star north preceding.
693	159	.....	.....	Not found.
	159	8 8	.....	
694	.....	8 8	.....	Herschel's position, 25·8° ; distance, 20" ; magnitudes, 8—8.
	.....	.....	.....	Clouds stopped observations.
	159	8 8	.....	
695	159	8 8	.....	
696	.....	10 10	.....	Seen at Woodford ; not measured ; 2,200 above sea.
	159	10 10	.....	Definition very bad.
697	.....	6 9	.....	Companion not found ; night very good.
698	159	9 10	.....	Very indistinct.
699	159	11 12	.....	Seen ; too faint to measure.
700	159	11 11	.....	Ill-defined ; bad observations.
701	150	5½ 9	Faint yellow and tinge of green.	
	140	.....	.....	Definition not good.
	.....	.....	.....	Only double.
702	.....	10 10	.....	Seen ; definition too bad to measure.
703	.....	7 12	.....	Carefully examined ; companion not seen.
704	150	5½ 9	Bright yellow and blue	Another bright yellow 5½ magnitude star 1' north of this.
	159	4 9	.....	

## DOUBLE Stars observed and

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					R.	H.						
							h. m.	° ' "	° ' "			
705	21	10	79	5389.....	..	H.	22 25	74 38	.....	..	..	..
706	30	9	80	5342.....	..	H.	22 26	66 42	.....	..	..	..
707	24	11	81	5354.....	..	H.	22 33	53 24	74 45	6	25.42	6
708	10	12	80	5362.....	..	H.	22 40	47 35	139 6	6	8.96	6
709	21	10	73	5364.....	R.	..	22 42	57 10	100 9	6	10.34	6
710	7	11	79	5366.....	..	H.	22 45	43 37	251 30	10	14.67	10
711	21	10	70	5368.....	R.	..	22 47	85 13	125 51	10	7.79	10
712	10	12	80	5373.....	..	H.	22 55	64 54	97 33	6	46.96	6
713	25	11	80	5374.....	..	H.	22 55	73 51	58 17	6	11.92	6
714	30	9	70	5378.....	R.	..	22 56	83 4	.....	..	..	..
	1	10	70	.....	R.	..	22 56	.....	345 7	8	39.95	8
715	14	10	73	5379.....	R.	..	22 56	57 0	323 13	5	12.55	5
716	25	11	80	.....	..	H.	22 59	75 37	52 47	6	3.11	6
717	12	11	73	5382.....	R.	..	22 57	52 4	48 13	6	7.71	6
	27	10	79	.....	..	H.	22 58	52 7	50 24	10	6.85	10
718	23	9	70	θ Gruis Jacobs 238.....	R.	..	23 0	44 12	11 23	2	2.30	2
	5	10	70	.....	R.	..	23 0	.....	16 44	1	2.30	1
719	27	9	70	After 5383.....	R.	..	23 0	51 22	258 47	3	8.00	3
	3	10	71	.....	R.	..	23 0	.....	258 37	6	8.56	6
	12	11	73	.....	R.	..	23 0	51 21	257 29	6	8.71	6
	14	10	79	.....	..	H.	23 0	51 23	260 46	10	7.89	10
720	10	11	70	After 5384.....	R.	..	23 2	60 22	290 56	10	14.29	10
	30	11	81	.....	..	H.	.....	.....	293 23	6	14.04	6
721	5	10	70	5385.....	R.	..	23 3	79 0	.....	..	..	..
722	25	11	80	5387.....	..	H.	23 7	41 36	277 52	6	7.43	6
723	3	10	70	5388.....	R.	..	23 11	81 5	120 6	3	11.80	3
	15	10	70	.....	R.	..	.....	.....	122 6	10	11.60	10
724	5	10	70	After 5390.....	R.	..	23 11	61 40	100 55	2	40.65	2
725	10	11	71	5394.....	R.	..	23 14	51 3	209 53	6	16.10	6
	25	11	79	.....	..	H.	.....	.....	209 49	10	16.40	10
726	15	11	80	5395.....	..	H.	23 14	38 18	231 15	6	2.57	6
727	29	10	70	5400.....	R.	..	23 23	54 59	.....	..	..	..
728	9	12	80	5401.....	..	H.	23 24	52 56	42 16	6	11.97	6
729	15	11	70	5402.....	R.	..	23 25	69 45	198 24	10	35.92	10
	5	12	81	.....	..	H.	.....	.....	198 5	6	36.67	6
730	15	10	73	5407.....	R.	..	23 29	64 43	22 46	4	10.33	4
	25	11	80	.....	..	H.	.....	.....	22 33	6	9.08	6
731	21	10	73	5411 θ Phoenixis.....	R.	..	23 33	47 22	271 15	4	4.75	4
732	8	11	70	5414.....	R.	..	23 36	73 31	261 55	9	8.32	11
	7	12	80	.....	..	H.	.....	.....	261 15	6	6.64	6
733	8	11	70	5419.....	R.	..	23 40	72 39	.....	..	..	..
	16	11	80	.....	..	H.	23 40	72 38	100 36	6	21.17	6
734	11	11	79	5422.....	..	H.	23 43	44 10	347 47	10	5.96	10
735	8	10	70	5427.....	R.	..	23 47	72 52	64 21	1	9.30	1
	7	11	79	.....	..	H.	.....	.....	60 31	10	8.32	10
736	16	11	80	5430.....	..	H.	23 48	77 23	55 33	6	20.90	6
737	12	11	79	5432.....	..	H.	23 49	59 29	37 33	10	21.50	10
738	28	9	70	5437.....	R.	..	23 54	53 46	.....	..	..	..

measured at Sydney Observatory—*continued.*

No. of star in this catalogue.	Magnifying power used.	Magnitudes.	Colours.	Remarks.
705	....	9 11	.....	Seen; not measured.
706	159	11 11	.....	Seen; too hazy to measure <sup>1</sup>
707	159	8 9	.....	
708	159	7 11	.....	
709	....	10 10	.....	South end of a small triangle.
710	159	8 9	.....	
711	100, 320	9 9	.....	First two measures with power 100; Herschel's position is 125° 5'; distance, 8"; magnitudes, 9-9.
712	159	7 10	.....	
713	159	11 11	.....	
714	....	9 9	.....	Seen; clouds prevented observations.
715	150	10 10	.....	Definition good; clouds stopped observations.
716	159	10 10	.....	
717	140	9 9	Both white.	
718	159	9 9	.....	
718	....	5 8	.....	Good observations.
719	....	4 8	.....	R. A. S. Journal, vol. 17, page 88. Jacob's catalogue.
719	230	7 7½	.....	Definition fair.
719	....	7 7½	.....	
719	140	7½ 8	Both straw yellow ..	Fine and clear.
720	159	6 7	.....	
720	....	8 11	.....	Position doubtful; the first three measures of distance unsatisfactory; Herschel's position, 293° 4'; distance, 12"; magnitudes, 8-10.
721	159	8 10	.....	
721	....	....	.....	Not found.
722	159	8 10	.....	
723	100	8 12	.....	Fine pair; companion not seen with higher power than 100.
723	....	8 11	.....	Herschel's position, 124° 4'; distance, 10"; magnitudes, 8-12. Reflector.
724	....	6 12	.....	
725	150	5½ 9	Yellow.	
725	159	6 9	.....	
726	159	9 10	.....	Very badly defined.
727	....	7 13	.....	Not seen; light clouds about.
728	159	10 10	.....	
729	100	8 11	.....	Herschel's position, 202°; distance, 35"; magnitudes, 8-11.
730	159	8 10	.....	
730	....	10 11	Yellow.	
731	159	8 10	.....	Herschel's declination is 65° 46' south.
731	....	7 8	.....	Definition got very bad after first two observations.
732	150	8 10	.....	Definition improved; Herschel's position, 262° 7'; distance, 8"; magnitudes, 8-10.
732	159	8 10	.....	Cloudy.
733	....	....	.....	Not found; full moon.
733	159	10 10	.....	
734	159	10 10	.....	Very difficult; light wires.
735	....	9 9	.....	Clouds stopped observations.
735	159	9 9	.....	
736	159	10 11	.....	
737	159	9 10	.....	
738	....	....	.....	Could not see the companion.



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SYDNEY OBSERVATORY.

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**NEW DOUBLE STARS**

FOUND WHILE REMEASURING

**HERSCHEL'S CAPE STARS,**

**1882.**

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## SYDNEY OBSERVATORY List of New Double Stars.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
1	h. m.	° ' "	°	°	"	"	1871-752	9 14		
2	0 0	78 12	.....	.....	.....	.....	80-720	11 12	.....	Brighter star of H 3870; has a companion not seen by Herschel.
3	0 4	72 17	.....	.....	.....	25	73-900	9 10	.....	
4	0 22	66 37	.....	.....	.....	1				
5	0 28	54 15	61-300	.....	8-09	.....	73-861	10 11	.....	First seen, 1870-851; position, 192-433; distance, 23-128.
6	1 1	60 40	136-417	.....	22-91	.....	80-407	9 94	.....	
7	1 16	58 0	.....	.....	.....	15	70-884	14 14		
8	1 16	76 26	.....	.....	.....	10	70-884	11 11		
9	1 16	83 22	.....	.....	.....	20	70-884	11 11		
10	1 17	80 50	.....	.....	.....	1	70-884	13 13		
11	1 21	86 5	.....	.....	.....	12	70-884	12 12		
	1 38	76 36	126-867	.....	1-94	.....	73-881	9 9	White ..	Very fine double; it is the preceding of a triangle, and just in the field south preceding H 8464, and much more difficult; evidently not divided by H's reflector.
12 B A C 599	1 52	60 46	85-875	.....	2-04	.....	82-032	8 8		
13	2 9	68 3	82-763	.....	37-40	.....	70-897	10 10		
14	2 11	78 13	162-791	.....	9-76	.....	81-071	9 10		
15	2 11	70 42	136-541	.....	11-57	.....	70-897	10 11		
16	2 16	60 35	.....	.....	.....	14	73-861	11 11	.....	
17	2 34	62 11	.....	.....	.....	8	70-897	12 13		
18	2 45	62 5	46-853	.....	27-80	.....	70-897	11 12		
19	3 12	76 10	.....	.....	.....	4	70-905	11 12		
20	3 12	65 40	.....	.....	.....	25	70-905	11 13		
21	3 12	67 50	.....	.....	.....	20	70-905	12 13		
22	3 12	69 60	.....	.....	.....	30	70-905	11 11		
23	3 13	70 38	.....	.....	.....	15	70-905	12 12		
24	3 13	74 27	.....	.....	.....	30	70-905	11 12		
25	3 13	80 35	.....	.....	.....	20	71-024	11 12		
26	3 15	44 22	38-950	.....	44-71	.....	79-083	7 8		
27	3 16	69 54	.....	.....	.....	10	81-082	12 13		
28	3 18	70 50	.....	.....	.....	20	70-908	7 12		
29	3 18	70 15	.....	.....	.....	40	81-112	7 13		
30	3 40	80 56	.....	.....	.....	10	75-919	10 11		
31	3 42	78 46	244-017	.....	27-04	.....	71-013	9 11		South preceding H 3499 only 14 S.; cannot understand why H. did not see it.

## SYDNEY OBSERVATORY LIST of New Double Stars—continued.

No. and Name.	R. A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
32	h. m.	° ' "	•	•	•	•	1881-164	9	10	Suspected double. First seen, 1871-040. First seen, 1871-048, in field with last star.
33	3 56	37 20	196-367	•	23-00	•	81-164	9	10	
34	3 57	37 9	292-717	•	13-46	•	80-021	9	10	
35	4 0	36 30	•	235	•	•	•	10	11	
36	4 1	32 50	•	30	•	15	•	•	•	In same field.
37	4 1	32 50	•	180	•	30	80-040	10	10	
38	4 1	36 53	•	230	•	60	•	•	•	
39	4 4	34 17	•	•	•	•	71-048	7	8	
40	4 5	35 32	236-412	•	1-58	•	81-111	10	11	Measured with 590 power; angle not very different from h. 3631, measured same evening. In same field.
41	4 6	35 32	207-900	•	41-58	•	80-021	8	8	
42	4 7	30 40	•	200	•	•	80-021	8	9	
43	4 8	30 45	•	80	•	•	71-040	8	8	
44	4 9	30 30	•	•	•	25	71-040	9	9	Both white.
45	4 9	73 0	•	•	•	12	71-040	8	9	
46	4 9	73 0	•	•	•	15	71-040	10	10	
47	4 9	73 25	•	•	•	20	71-040	9	11	
48	4 9	58 13	•	•	•	15	71-040	7	8	Not far from h. 3631 another star looks double.
49	4 11	58 30	236-257	•	1-58	•	71-040	9	10	
50	4 9	58 23	•	•	•	•	71-040	9	10	
51	4 10	51 56	•	210	•	6	71-040	9	10	
52	4 12	58 30	•	•	•	•	•	•	•	Mags. not given.
53	4 15	56 33	•	45	•	30	80-040	7	9	
54	4 21	57 18	•	30	•	30	79-093	8	8	
55	4 37	58 1	98-367	•	32-35	•	79-093	9	9	
56	4 40	61 23	•	•	•	10	82-194	5	10	Fine double.
57	5 0	35 35	318-350	•	2-23	•	79-109	8	9	
58	5 1	35 14	187-383	•	37-81	•	71-023	11	12	
59	5 13	73 20	•	210	•	•	71-023	11	15	
60	5 18	78 20	•	110	•	•	73-073	7	0	Suspected double.
61	5 47	80 40	•	•	•	25	71-023	10	10	
62	6 12	67 10	•	•	•	20	71-023	9	11	
63	6 13	73 36	•	•	•	10	71-023	11	11	
64	6 14	66 17	•	•	•	20	71-023	10	10	Large; is a fine double; position, 237° 61'; distance, 72"; power, 580.
65	6 26	50 16	318-083	•	12-50	•	79-185	6	9	



SYDNEY OBSERVATORY LIST of New Double Stars—*continued*.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
66	6 32	66 17	.....	.....	.....	.....	1871-930	9 10	.....	Two smaller stars follow; nice double.
67	6 32	77 21	.....	.....	.....	.....	71-929	8 8	.....	
68	6 40	55 22	.....	.....	.....	.....	74-155	9 12	.....	
69	6 40	58 22	353-768	.....	4-95	.....	79-213	10 11	.....	
70	7 8	72 55	.....	90	.....	.....	72-100	11 11	.....	First seen, 73-191 north and 12a. following h. 3859.
71	7 14	44 39	77-465	.....	15-39	.....	79-248	10 10	.....	
72	7 15	62 57	317-044	.....	26-87	.....	81-303	9 10	.....	
73	7 16	44 55	138-137	.....	9-34	.....	81-278	11 11	.....	
74	7 18	52 5	282-354	.....	41-97	.....	80-437	7 8	.....	Triple; three stars nearly in a line.
75	7 19	55 6	{ 88-316	.....	5-07	.....	82-155	10 11 11	.....	
76	7 19	55 9	{ 70-333	.....	31-82	.....	80-437	10 11	.....	
77	7 25	61 48	261-608	.....	26-73	.....	80-440	11 12	.....	
78	7 28	60 41	101-783	.....	21-03	.....	81-303	11 11	.....	In a cluster; first seen, 73-180. In field with 407 on 10/3/82, angle 66° 07"; distance, 3-76".
79	7 45	58 45	287-090	.....	15-50	.....	80-440	8 9	.....	
80	7 52	53 20	299-790	.....	36-78	.....	80-347	8 8	.....	
81	8 4	48 51	341-175	.....	34-61	.....	80-440	9 9	.....	
82	8 14	62 31	34-595	.....	15-08	.....	81-349	6 10	.....	Diagram shows it in field and south of h. 4122.
83	8 16	58 47	62-256	.....	2-60	.....	81-355	11 11	.....	
84	8 22	58 44	88-108	.....	8-54	.....	81-352	10 10	.....	
85	8 24	34 44	213-833	.....	7-71	.....	81-341	7 10	.....	
86	8 35	45 47	145-928	.....	23-99	.....	79-328	9 11	.....	A pair seen here, 81-339.
87	8 53	52 16	240-220	.....	13-91	.....	81-256	6 9	Yellow and bluish	
88	8 53	53 20	240-517	.....	3-17	.....	74-109	8 8	.....	
89	8 55	67 44	147-667	.....	10-92	.....	80-284	7 10	.....	
90	8 56	59 17	212-128	.....	44-40	.....	81-355	9 13	.....	Two pairs in the field.
91	8 56	59 17	.....	279	.....	.....	81-355	11 12	.....	
92	9 9	58 0	.....	100	.....	.....	81-256	9 10	.....	
93	9 9	58 0	.....	140	.....	.....	81-256	10 11	.....	
94	9 9	59 22	.....	380	.....	.....	81-256	10 11	.....	Four 9th magnitude stars here with companions.
95	9 10	57 34	.....	.....	.....	.....	81-256	9 9	.....	
96	9 10	57 34	.....	.....	.....	.....	81-256	9 9	.....	
97	9 10	57 34	.....	.....	.....	.....	81-256	9 9	.....	
98	9 10	57 34	.....	.....	.....	.....	81-256	9 9	.....	

## SYDNEY OBSERVATORY LIST of New Double Stars—continued.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
99	9 11	53 57	.....	355	.....	"	1881-256	10	10	Four pairs in the field. See diagram.
100	9 11	53 57	.....	50	.....	12	81-254	11	11	
101	9 11	54 0	.....	345	.....	15	81-254	11	11	
102	9 12	54 30	.....	45	.....	6	81-254	11	11	
103	9 12	55 30	.....	50	.....	.....	81-254	11	11	See diagram R. 104. Stars A, B, C, and D. Triple. See diagram.
104	9 12	55 30	.....	350	.....	.....	81-256	10	11	
105	9 12	55 30	.....	280	.....	.....	81-256	10	11	
106	9 12	58 15	.....	120	.....	16	81-256	9 9 9 9	.....	
107	9 12	57 52	.....	260	.....	25	.....	9	10	Triple. See diagram.
108	9 12	55 12	.....	270	.....	8	.....	10	10	
109	9 13	49 47	.....	69-728	.....	9-10	81-393	10 10 12	.....	
110	9 17	59 13	.....	340	.....	12	81-393	10 11	.....	
111	9 17	56 46	.....	26-623	.....	11-06	80-347	11 12	.....	First seen, 1878-174. First seen, 1880-314.
112	9 19	43 59	.....	209-132	.....	8-52	80-333	9 9 9 9	.....	
113	9 19	49 0	.....	281-060	.....	9-95	80-333	10 11	.....	
114	9 20	49 0	.....	345	.....	15	80-333	11 11	.....	
115	9 21	49 15	.....	310	.....	.....	80-333	10 11	.....	In same field.
116	9 21	49 15	.....	350	.....	18	80-333	10 11	.....	
117	9 21	49 15	.....	20	.....	18	80-333	10 11	.....	
118	9 22	56 58	.....	85	.....	18	80-333	11 11 11 11	.....	
119	9 27	55 28	.....	230	.....	10	73-161	10 11	.....	See diagram.
120	9 27	55 28	.....	18-633	.....	16-37	73-207	10 10	.....	
121	9 28	55 29	.....	34-433	.....	9-59	73-207	10 10	.....	
122	9 28	55 26	.....	210	.....	6	81-355	10 11	.....	
123	9 28	57 23	.....	160	.....	10	81-355	11 12	.....	This is the following star of a small triangle. First observed 1880-280; position, 167° 8'; distance 8' 42"; magnitudes, 8-10.
124	9 32	47 29	.....	94-783	.....	3-20	73-207	9 8	.....	
125	9 32	47 29	.....	80-050	.....	2-53	73-174	8 8	.....	
126	9 32	48 13	.....	162-250	.....	2-12	81-393	10 10	.....	
127	9 31	43 30	.....	.....	.....	.....	80-314	8 11	.....	Triple. See diagram. First seen, 1880-333. First seen, 1880-333.
128	9 31	43 31	.....	310	.....	7	80-333	7 10	.....	
129	9 36	43 46	.....	236-217	.....	13-11	80-333	7 10	.....	
130	9 38	55 15	.....	843-057	.....	2-38	80-333	7 10	.....	
131	9 41	44 30	.....	290-633	.....	35-90	80-608	9 10	.....	First seen, 1880-333. First seen, 1880-333. First seen, 1880-333.
132	9 41	44 30	.....	100-433	.....	4-12	73-174	8 8	.....	
133	9 40	49 0	.....	243-691	.....	17-67	80-443	8 8	.....	
134	9 41	44 30	.....	130	.....	3	81-415	10 10	.....	

## SYDNEY OBSERVATORY LIST of New Double Stars—continued.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
132 .....	9 46	56 54	159-088	.....	7-50	.....	1873-174	11 11½	.....	Exactly on wire—270°.
133 .....	9 46	80 45	224-467	.....	25-13	.....	80-402	9 9	.....	
134 .....	9 49	85 27	270-000	.....	15-44	.....	71-224	8 8½	.....	
135 .....	9 49	87 10	.....	240	.....	10	71-224	11 11	.....	
136 .....	9 49	79 56	225-407	.....	13-41	.....	80-358	8 9	.....	A third star forms a curve; distance, a little more than A to B.
137 .....	9 49	64 23	47-067	.....	14-72	.....	73-204	9½ 11	Red	
138 .....	10 2	55 2	.....	{ 270	.....	4	{ 81-256	9½ 10	.....	
139 .....	10 11	66 40	331-717	.....	2-75	.....	80-489	7 9	.....	
140 .....	10 14	55 29	277-075	.....	2-88	.....	81-467	8 9	.....	Triple. See diagram.
141 .....	10 15	66 23	37-067	.....	2-93	.....	80-344	8 9	.....	First seen, 1880-344.
142 .....	10 18	64 40	354-083	.....	3-38	.....	80-495	8 11	.....	First seen, 1878-224; nearly as close as H. 4306; fine object.
143 .....	10 21	49 32	21-153	.....	17-27	.....	81-398	10 11	.....	Follows almost in field with the last star.
144 .....	10 21	49 32	.....	20	.....	17	81-398	10 11	.....	First seen, 1874-234. Three stars within 12a in R.A. and almost exactly in a line when the wire bisects the first and second; the third is 0-5" south of the line. The star forms the angle of a right-angled triangle; position doubtful. Large star; bright red.
145 .....	10 21	47 23	264-920	.....	24-06	.....	80-325	9 11	.....	
146 .....	10 22	54 56	98-970	.....	11-62	.....	81-467	9 9	.....	
147 .....	10 23	58 7	.....	.....	.....	.....	80-344	6½ 0	.....	
148 .....	10 25	47 16	.....	275	.....	3	80-314	.....	.....	First observed, 1880-391; position 806-417; distance, 2-04"; magnitude, 9½-10. First seen, 1880-314.
149 .....	10 25	66 7	134-350	.....	4-20	.....	80-347	9 10	.....	
150 .....	10 27	61 40	346-336	.....	1-87	.....	81-446	9 10	.....	
151 .....	10 27	68 20	191-723	.....	3-47	.....	80-448	8 10	.....	
152 .....	10 34	63 51	6-751	.....	5-02	.....	74-287	8½ 10	Yellow and blue.	First observed, 1880-391; position 806-417; distance, 2-04"; magnitude, 9½-10. First seen, 1880-314.
153 .....	10 35	58 13	70-417	.....	15-72	.....	71-481	.....	.....	
154 .....	10 39	63 27	304-333	.....	3-60	.....	80-500	9 9	.....	
155 $\mu$ Argo .....	10 40	48 43	5-4633	.....	2-81	.....	80-825	8 9	Pale yellow and pale green.	
156 .....	10 41	58 40	208-983	.....	2-17	.....	76-144	10 10	.....	

## SYDNEY OBSERVATORY LIST OF New Double Stars—continued.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
157 .....	10 43	65 24	55 378	.....	8 34	.....	1831-464	8½	11m. blue.	Four minutes following northerly part, Eta Argus cluster; fine double star; distance seems to be increasing.
158 .....	10 44	49 13	251-473	.....	34 41	.....	81 456	9	.....	
159 .....	10 44	49 13	279-944	.....	43 06	.....	81 456	8½	.....	
160 .....	10 45	68 8	234-989	.....	7 00	.....	81 464	9	.....	
161 .....	10 45	56 38	256-033	.....	0 50	.....	74 188	7	.....	
162 .....	10 47	79 56	257-250	.....	0 72	.....	76 128	7	.....	When first seen thinnest wire covered from centre to centre; much wider now.
			261-517	.....	0 85	.....	78 221	7	.....	
			258-817	.....	1 15	.....	80 204	7	.....	
			261-825	.....	1 20	.....	82 182	7	.....	
			228-167	.....	10 03	.....	80 402	9	.....	
163 .....	10 50	58 27	55-217	.....	1 80	.....	79 287	8	.....	R.A. of this star doubtful.
164 .....	10 54	60 33	82-183	.....	4 52	.....	78 311	7	.....	
165 .....	11 6	46 27	59-450	.....	3 15	.....	80 317	8	.....	
166 .....	11 8	54 51	.....	.....	7 39	.....	81 484	11	.....	
167 .....	11 10	47 21	98-535	.....	21 37	.....	79 440	11	.....	
168 .....	11 17	42 20	125-683	.....	3 20	.....	71 418	9	.....	Discovered and measured, 81 464; position, 248 308; distance, 14 04; magnitude, 9-10.
169 .....	11 17	54 41	.....	.....	.....	.....	81 495	10	.....	
170 .....	11 20	55 48	250-014	.....	15 49	.....	81 495	9	.....	
171 .....	11 21	46 49	350-900	.....	2 72	.....	80 317	8	.....	
172 .....	11 24	55 21	105-570	.....	25 12	.....	81 495	9	.....	
173 .....	11 31	46 21	149-820	.....	2 32	.....	81 467	9	.....	First seen, 71 489. In a cluster B. See diagram. Stars are not all shown? h 4476.
174 .....	11 33	52 25	257-717	.....	4 38	.....	80 382	8	.....	
175 .....	11 35	60 24	15-363	.....	8 37	.....	82 150	9½	.....	
176 .....	11 35	60 24	307-290	.....	3 03	.....	82 500	.....	.....	
177 .....	11 38	46 35	157-567	.....	3 09	.....	80 325	8½	.....	
178 .....	11 40	42 40	162-453	.....	10 09	.....	80 454	9	.....	A in diagram. First seen, 80 314. First seen, 71 415.
179 .....	11 40	57 28	355-217	.....	5 07	.....	71 869	9	.....	
180 .....	11 41	52 22	180-733	.....	2 65	.....	73 256	9½	.....	
181 .....	11 52	70 45	108-400	.....	10 98	.....	80 382	10	.....	
182 .....	11 56	84 22	.....	.....	.....	.....	71 358	11	.....	
183 .....	11 58	76 20	.....	.....	.....	.....	71 358	10	.....	

## SYDNEY OBSERVATORY LIST of New Double Stars—continued.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
184 .....	11 56	71 35	200-401	.....	24-16	.....	1880-456	11 11	.....	First seen, 71-358; triple; distance, 12 <sup>h</sup> e, nearly in a line.
185 .....	11 50	61 10	62-000	.....	9-34	.....	80-402	10 10	.....	The preceding point of a small triangle.
186 .....	11 50	61 20	147-900	.....	14-40	.....	80-402	7 8	.....	Triple. See diagram.
187 .....	12 0	60 35	231-800	.....	24-84	.....	80-426	9 9	.....	
188 .....	12 0	84 22	148-337	.....	18-00	.....	80-456	11 11	.....	
189 .....	12 0	80 14	223-055	.....	24-43	.....	80-456	11 12	.....	First seen, 71-353.
190 .....	12 1	68 13	49-985	.....	36-40	.....	80-421	10 10	.....	First seen, 71-295; position, 60° e; distance, 15° e.
191 .....	12 4	60 21	209-550	.....	10-78	.....	80-426	9 10	.....	First observed, 73-311; position, 212,350; distance, 4-33.
192 .....	12 5	61 37	.....	.....	3-87	.....	78-284	10 11	.....	
193 .....	12 6	35 25	168-650	.....	0-83	.....	81-541	8 8	.....	First seen, 71-358; distance, 12° e.
194 .....	12 7	75 54	0-080	.....	13-87	.....	80-456	10 11	.....	In same field.
195 .....	12 8	60 21	307-583	.....	7-94	.....	80-426	11 11	.....	
196 .....	12 8	60 25	276-883	.....	8-95	.....	80-426	10 11	.....	
197 .....	12 14	59 40	31-750	.....	6-03	.....	80-402	9 10	.....	First seen, 78-284; position, 90° e; distance, 3° e; magnitudes, 10 and 11.
198 .....	12 15	51 35	50-868	.....	2-63	.....	80-432	9 10	.....	
199 .....	12 21	57 0	.....	.....	.....	.....	80-390	11 12	.....	
200 .....	12 21	60 8	134-917	.....	2-90	.....	80-439	9 10	.....	First seen, 78-284.
201 .....	12 23	61 11	270-467	.....	2-43	.....	80-382	9 10	Yellow	First seen, 78-284—the most northern of these stars nearly in a line, middle one 7 mag. orange, yellow, and white.
202 .....	12 27	57 10	95-833	.....	21-94	.....	80-432	11 12	.....	First seen, 78-284; one of the closest doubles known.
203 $\beta$ Muscae	12 31	40 13	180-614	.....	0-19	.....	81-511	9 11	.....	First seen, 80-432. First observed, 80-440; position, 6-033; distance, 3° e.
204 .....	12 31	57 30	169-700	.....	18-00	.....	80-432	9 9	.....	First seen, 78-278.
205 .....	12 32	57 30	271-940	.....	23-40	.....	81-511	11 11	.....	
206 .....	12 37	55 15	271-917	.....	18-58	.....	80-432	9 9	.....	
207 .....	12 38	67 17	317-267	.....	0-54	.....	80-344	4 4	.....	
208 .....	12 40	55 10	5-750	.....	3-64	.....	80-402	10 11	.....	First seen, 78-284.
209 .....	12 41	55 27	133-208	.....	1-58	.....	80-432	9 10	Light yellow	
210 .....	12 54	53 4	239-150	.....	5-83	.....	81-541	9 10	.....	
211 .....	12 59	60 20	.....	.....	.....	.....	80-436	9 9	.....	
212 .....	12 59	61 3	109-400	.....	5-80	.....	74-456	10 10	White.	First seen, 78-284.

## SYDNEY OBSERVATORY LIST of New Double Stars—continued.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
213 .....	13 0	59 14	° 27-079 19-266	° ..... .....	" 0-33 0-63	" ..... .....	1874-270 80-344	8 8 8 8	Both orange.	A very beautiful double star; both alike and orange coloured.
214 .....	13 1	41 46	25-750	45	0-70	4"	80-426 81-514	8 8 11 11		
215 .....	13 8	80 40	.....	.....	.....	.....	71-390	10 11		
216 .....	13 8	56 30	139-250	.....	5-17	.....	80-440	8 10		
217 .....	13 20	57 30	170-900	.....	8-33	.....	80-429	9½ 9½		First observed, 74-421; position, 169-983"; distance, 4-17".
218 .....	13 21	43 11	167-114	.....	3-24	.....	81-514	9 11		First seen, 71-451; position, 40e; distance, 8½e.
219 .....	13 22	73 37	23-933	.....	13-63	.....	80-380	9 12		Middle of a remarkable string of stars.
220 .....	13 23	57 56	.....	210	.....	1"	73-294	.....		First seen, 71-494.
221 .....	13 29	60 30	164-674	.....	7-13	.....	80-415	11 11		Found, 71-443; may be H 4596 if error of 50', declination in Cape list.
222 .....	13 29	64 16	107-150	.....	1-15	.....	79-522	9 9		
223 .....	13 31	57 57	.....	20	.....	.....	80-484	6 13		Triple. See diagram.
224 .....	13 31	63 26	{ 212-650 836-417	.....	{ 8-93 6-70	.....	80-440	10 10 10		
225 .....	13 42	53 56	841-325	.....	9-13	.....	81-434	10 11		First seen, 71-432.
226 .....	13 43	73 16	133-767	.....	16-12	.....	80-413	9 9		First seen, 73-432. The most northerly of several stars; one yellow, another red.
227 .....	13 43	53 33	343-466	.....	1-03	.....	80-413	5 6	Both yellow.	
228 .....	13 50	55 48	346-364	.....	14-54	.....	81-533	9 11		First seen, 71-432; four wide pairs in field here.
229 .....	13 52	72 20	116-711	.....	6-30	.....	80-492	9 10		Three 8 magnitude stars in a line; distance, A to B, 39"; B to C, 43"; when examined with power of 800 they seem in a straight line at times; the following one seems to be ½ of a second on the following side of the line. First observed, 71-432; position, 134-100; taken as a test object for change.
230 .....	13 53	61 43	154-100	.....	.....	.....	80-322	8 8 8		
231 .....	13 53	66 43	160-000	.....	3-36	.....	80-492	9 9½		
232 .....	13 53	66 34	175-631	.....	4-39	.....	80-492	9 9		

## SYDNEY OBSERVATORY LIST of New Double Stars—continued.

No. and Name.	R. A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
223	13 54	62 0	86500	.....	14.18	"	1890-403	10 11	.....	First seen, 71 432.
224	13 54	62 22	176900	.....	6.15	.....	74 489	9 1/2	.....	.....
225	13 54	74 50	271 350	.....	96.17	.....	80 508	10	.....	First seen, 71 432.
226	13 55	57 1	14 350	.....	13.78	.....	80 514	9 11	.....	First seen, 71 432.
227	13 55	57 0	66 750	.....	13.01	.....	80 514	9 11	.....	.....
228	13 55	57 8	279 817	.....	19.96	.....	81 588	9 11	.....	In the field with h 4645.
229	13 56	57 8	311 483	.....	13.25	.....	81 588	9 9	.....	.....
230	14 1	72 29	308 322	.....	32.92	.....	80 511	10 11	.....	.....
241	14 1	72 29	110 103	.....	25.00	.....	80 511	10 11	.....	.....
242	14 3	75 38	217 208	.....	7.84	.....	80 511	10 11	.....	.....
243	14 14	79 36	123 963	.....	5.96	.....	80 495	9 1/2	.....	.....
244	14 15	47 47	125 325	.....	3.95	.....	81 533	8 11	.....	11 mag.; blue.
245	14 21	61 50	249 320	.....	21.22	.....	80 492	11 11	.....	{ Two pairs; first seen, 71 443; distance, 2 1/2" e and 1 1/2" e.
246	14 21	61 50	.....	.....	.....	.....	71 443	.....	.....	First seen, 71 443.
247	14 22	75 47	322 400	.....	.....	.....	80 355	9 9 1/2	.....	Fine double.
248	14 22	46 8	291 374	.....	5.90	.....	74 432	9 10	.....	.....
249	14 23	62 3	33 633	.....	2.77	.....	81 601	8 10	.....	.....
250	14 23	69 52	21 808	.....	40.55	.....	70 741	7 10	.....	Red and blue.
251	14 45	69 56	236 403	.....	26.78	.....	80 495	8 11	.....	.....
252	14 46	69 56	260 801	.....	19.52	.....	80 495	11 11	.....	.....
253	14 46	69 58	.....	.....	.....	.....	80 574	10 11	.....	.....
254	14 46	69 58	.....	.....	.....	.....	80 574	10 11	.....	.....
255	14 50	69 29	335 483	.....	5.65	.....	72 582	7 9	.....	First seen, 72 517.
256	14 50	71 42	42 080	.....	1.68	.....	80 519	10 11	.....	{ In the same field.
257	14 57	61 17	.....	.....	.....	.....	81 601	11 11	.....	Power used, 159; measures 71 481; angle, 340 40; distance, 16 90.
258	14 57	61 17	.....	.....	.....	.....	81 601	11 11	.....	First seen, 72 566.
259	15 6	55 19	338 788	.....	16.90	.....	79 577	9 10	.....	Found on the date measured. Measures again 80 519; angle, 273 889; distance, 6 45".
260	15 25	60 7	334 903	.....	18.24	.....	80 533	11 12	.....	.....
261	15 25	72 36	90 808	.....	7.58	.....	74 522	10 10	.....	.....
262	15 36	80 10	271 110	.....	5.72	.....	74 522	10 10	.....	.....
263	15 27	63 8	.....	45	.....	.....	72 566	10 11	.....	Northern of three stars in line.
264	15 27	68 25	.....	210	.....	.....	72 566	10 11	.....	Precedes h. 4787 about half a field.
265	15 28	80 0	274 024	.....	4.70	.....	80 519	10 10	.....	In same field as h. 4787.
266	15 33	79 16	.....	.....	.....	.....	71 464	11 11	.....	.....

## SYDNEY OBSERVATORY LIST OF New Double Stars—continued.

No. and Name.	R. A.	Dec. S.	Position.		Distance.		Data of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
267 .....	15 36	65 5	°	°	2.79	"	1890-426	7	7	First observed, 71-579; position, 153-800; distance, 2.61.
268 .....	15 47	65 21	153-067	.....	5.71	.....	81-549	9	9	Second observation, 81-549; position, 131-317; 1.91" distance.
269 .....	15 50	65 37	134-200	.....	2.43	.....	72-579	9	9½	
270 .....	15 53	67 26	59-833	.....	10.32	.....	80-333	10	11	
271 .....	15 55	38 55	41-164	.....	5.41	.....	80-463	9	10	
272 .....	16 3	53 50	163-617	.....	4.70	.....	71-585	9½	9½	
273 .....	16 4	53 55	166-472	.....	10.41	.....	80-519	11	11½	
274 δ Tri Aust	16 4	63 23	{ 257-050 1-750 349-979	140	0.53	0.3	80-404	4	11	First seen, 71-585, 6a. following h. 4935.
ν Scorpii ..	16 8	19 9	.....	.....	0.50	.....	78-270	4	9	This is Burnham's close companion.
275 .....	16 9	64 6	.....	.....	0.50	.....	78-538	9½	10	Fine double; second observation, 81-547; position, 352-591; 3.83" distance.
276 .....	16 15	63 43	.....	45	.....	.....	74-511	9½	10	} Two pairs in field with Iota Tri. Aust.
277 .....	16 16	63 43	.....	45	.....	.....	71-527	12	12	
278 .....	16 16	63 43	19-700	.....	21.66	.....	71-527	11	13	
279 .....	16 18	63 58	.....	270	.....	.....	80-433	7	10	
280 .....	16 20	65 0	87-767	.....	9.85	.....	80-571	9	9½	
281 .....	16 23	61 23	123-383	.....	3.76	.....	80-432	9	10½	
282 .....	16 33	60 40	124-133	.....	3.80	.....	80-404	6½	7	Faint yellow
283 .....	16 35	55 31	87-860	.....	0.42	.....	81-604	7	9	Very pretty double.
284 .....	16 38	57 23	25-467	.....	6.83	.....	81-693	9½	9½	
285 .....	16 44	49 50	.....	135	.....	.....	73-415	10½	10½	Distance very uncertain; follows h. 4890.
286 .....	16 48	37 0	313-332	.....	17.13	.....	71-527	8	11	
287 .....	16 50	38 41	131-017	.....	3.06	.....	81-497	8	11	
288 .....	16 53	45 46	65-600	.....	1.99	.....	81-469	10	11	
289 .....	16 56	50 56	155-000	.....	.....	.....	80-537	9	12	New star in the pentagon, h. 4909.
290 .....	17 0	32 15	155-060	.....	12.09	.....	80-574	9½	11	First seen, 75-514.
291 .....	17 2	69 34	199-963	.....	3.42	.....	72-569	12½	12	
292 .....	17 3	60 38	.....	170	.....	.....	72-579	9	11	
293 .....	17 3	65 0	.....	185	.....	.....	80-577	9	11	First seen, 71-582.
294 .....	17 4	54 16	298-111	.....	14.11	.....	.....	12 12 12	.....	See diagram.
295 .....	17 4	60 50	.....	250	.....	.....	80-577	12 12 12	.....	
296 .....	17 6	38 7	138-817	.....	2.34	.....	80-757	7	10	
297 .....	17 10	40 26	0-333	.....	3.66	.....	80-757	7	10	Large star of h. 4935.
298 .....	17 11	34 51	224-333	.....	1.77	.....	77-643	7	9	



SYDNEY OBSERVATORY LIST of New Double Stars—*continued*.

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
299 .....	17 13	59 52	335-750	.....	11-52	.....	1890-593	10	.....	First seen, 73-487; magnitudes, 9-9.
300 .....	17 14	58 57	349-600	.....	9-48	.....	79-473	9 11	.....	First seen, 72-473.
301 .....	17 15	75 38	.....	170	.....	.....	79-473	10 12	.....	First observed, 72-579; position, 72-917; distance, 10-40.
302 .....	17 25	81 50	72-150	.....	10-68	.....	79-538	9 9	.....	First seen, 80-577.
303 .....	17 35	53 6	109-684	.....	2-54	.....	80-566	7 9	.....	
304 .....	17 48	55 23	82-500	.....	2-72	.....	80-651	9 10	.....	
305 .....	17 49	78 53	121-060	.....	9-45	.....	79-593	9½	.....	
306 .....	17 50	82 55	14-817	.....	2-59	.....	80-766	8 10	.....	
307 .....	18 7	33 35	355-673	.....	1-71	.....	80-766	9 10	.....	
308 .....	18 21	66 22	295-150	.....	4-21	.....	79-519	8 10	Yellow & blue	Position. Dis- tance. (First observation 73-612, 295-283, 5-02. Second " 78-799, 288-717, 3-70. Third " 81-547, 295-987, 5-01. Fourth " 81-549, 295-767, 5-02. Fifth " 81-549, 295-400, 5-01. Sixth " 81-549, 295-400, 5-01. Third in list. † Made at Woodford.
309 .....	18 32	55 57	216-916	.....	3-21	.....	71-541	7 9	.....	Nearly in same field with preceding pair.
310 .....	18 32	50 40	16-750	.....	32-58	.....	71-541	6 10	.....	
311 .....	18 32	53 47	117-817	.....	6-30	.....	71-697	9 10½	.....	
312 .....	18 33	47 46	329-104	.....	15-53	.....	80-596	9 10	.....	
313 .....	18 36	50 32	.....	45	.....	40	80-596	7 10	.....	
314 .....	18 36	50 32	290-233	.....	1-02	.....	80-798	6 10	.....	
315 .....	18 37	47 45	.....	.....	.....	12	71-583	9 10	.....	
316 .....	18 44	67 43	.....	120	.....	40	81-494	11 11	.....	
317 .....	18 54	45 49	287-267	.....	1-00	.....	81-716	9 10	.....	
318 .....	18 56	67 15	.....	160	.....	8	80-914	11 12	.....	Large star of h. 5078.
319 .....	18 56	77 14	54-400	.....	8-56	.....	71-915	9 10	.....	
320 .....	19 33	46 20	.....	180	.....	20	80-912	9 10	.....	
321 .....	20 19	57 47	97-060	.....	1-07	.....	80-839	7 8	Yellow.	First seen, 75-689.
322 .....	20 27	75 49	17-024	.....	17-96	.....	80-612	9 10	.....	Triple; near a red star. See diagram.
323 .....	20 31	63 8	321-564	.....	2-72	.....	80-612	9 11	.....	A tenth mag. star; precedes 14 seconds and 6" north.
324 .....	20 31	85 10	.....	40	.....	10	80-604	9 11	.....	
325 .....	20 42	56 53	109-617	.....	9-20	.....	79-785	9½	Faint blue ..	
326 .....	20 43	40 9	.....	300	.....	12	80-837	8 12	.....	
327 .....	20 56	56 60	211-617	.....	12-95	.....	73-694	9½ 10	.....	

SYDNEY OBSERVATORY LIST of New Double Stars — *continued.*

No. and Name.	R.A.	Dec. S.	Position.		Distance.		Date of Observations.	Mag.	Colours.	Remarks.
			Measured.	Estimated.	Measured.	Estimated.				
328 .....	21 10	60 45	°	°	"	"	1880-604	10	10	In the field with h. 5256. Precedes h. 5256 by 65s. and 5' farther south.
329 .....	21 10	60 36	115-700	110	20-50	14	70-736	9	9	
330 .....	21 11	67 26	2-017	.....	5-62	.....	70-736	9	12	First seen, 71-744. First seen, 71-744.
331 .....	21 19	55 44	109-717	.....	31-45	.....	80-615	8 <sup>4</sup>	8	
332 .....	21 20	60 47	333-725	.....	14-40	.....	80-615	10	11	Blue and white
333 .....	21 22	86 24	30-068	.....	6-07	.....	73-705	8	8	
334 .....	21 28	83 20	112-167	.....	2-82	.....	73-700	9	10	Precedes h. 5292 about 30s.
335 .....	21 35	61 25	.....	130	.....	.....	73-799	11	11	
336 .....	28 42	85 22	.....	145	.....	12	73-799	11	11	Very faint.
337 .....	21 49	88 50	.....	.....	.....	10	70-801	12	12	
338 .....	21 52	89 0	.....	200	.....	10	71-289	10	10	The northern of two stars.
339 .....	22 35	65 20	248-767	.....	11-14	.....	73-785	9	10	
340 .....	22 52	77 51	.....	120	.....	12	70-801	13	14	Triple.
341 .....	23 1	72 38	.....	.....	.....	12	70-856	11	12	
342 .....	23 1	84 53	.....	.....	.....	15	70-856	11	14	A third magnitude star north preceding.
343 .....	23 11	58 51	337-069	.....	15-58	.....	80-875	8	10	
344 .....	23 17	54 25	211-164	.....	25-75	.....	80-941	7	11	Verified 80-746; estimated angle, 110e.
345 .....	23 25	81 42	.....	.....	.....	12	70-870	11	11	
346 .....	23 25	79 20	.....	140	.....	20	70-870	10	10	Yellow .....
347 .....	23 31	65 44	.....	.....	.....	30	73-785	7	10	
348 .....	23 33	69 45	350-283	.....	4-16	.....	70-870	8	9	About a dozen doubles near this.
349 .....	8 46	64 55	.....	130	.....	5	82-274	8	12	
350 .....	9 13	57 51	.....	270	.....	6	82-290	9	10	

TABLE showing Day and Fraction of the year.

January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.	day.	frac.
1	.000	1	.085	1	.162	1	.246	1	.329	1	.413	1	.496	1	.580	1	.665	1	.747	1	.832	1	.915
2	.003	2	.088	2	.164	2	.249	2	.331	2	.416	2	.498	2	.583	2	.668	2	.750	2	.835	2	.917
3	.006	3	.090	3	.167	3	.252	3	.334	3	.419	3	.501	3	.586	3	.671	3	.753	3	.838	3	.920
4	.008	4	.093	4	.170	4	.255	4	.337	4	.424	4	.504	4	.589	4	.674	4	.756	4	.841	4	.923
5	.011	5	.096	5	.173	5	.257	5	.340	5	.424	5	.507	5	.591	5	.676	5	.758	5	.843	5	.925
6	.014	6	.099	6	.175	6	.260	6	.342	6	.427	6	.509	6	.594	6	.679	6	.761	6	.846	6	.928
7	.016	7	.101	7	.178	7	.263	7	.345	7	.430	7	.512	7	.597	7	.682	7	.764	7	.849	7	.931
8	.019	8	.104	8	.181	8	.266	8	.348	8	.433	8	.515	8	.600	8	.685	8	.767	8	.852	8	.934
9	.022	9	.107	9	.183	9	.268	9	.350	9	.435	9	.518	9	.602	9	.687	9	.769	9	.854	9	.936
10	.025	10	.110	10	.186	10	.271	10	.353	10	.438	10	.520	10	.605	10	.690	10	.772	10	.857	10	.939
11	.027	11	.112	11	.189	11	.274	11	.356	11	.441	11	.523	11	.608	11	.693	11	.775	11	.860	11	.942
12	.030	12	.115	12	.192	12	.277	12	.359	12	.444	12	.526	12	.611	12	.696	12	.778	12	.862	12	.945
13	.033	13	.118	13	.194	13	.279	13	.361	13	.446	13	.528	13	.613	13	.698	13	.780	13	.865	13	.947
14	.036	14	.121	14	.197	14	.282	14	.364	14	.449	14	.531	14	.616	14	.701	14	.783	14	.868	14	.950
15	.038	15	.123	15	.200	15	.285	15	.367	15	.452	15	.534	15	.619	15	.704	15	.786	15	.871	15	.953
16	.041	16	.126	16	.203	16	.288	16	.370	16	.455	16	.537	16	.622	16	.706	16	.789	16	.873	16	.956
17	.044	17	.129	17	.205	17	.290	17	.372	17	.457	17	.539	17	.624	17	.709	17	.791	17	.876	17	.958
18	.047	18	.131	18	.208	18	.293	18	.375	18	.460	18	.542	18	.627	18	.712	18	.794	18	.879	18	.961
19	.049	19	.134	19	.211	19	.296	19	.378	19	.463	19	.545	19	.630	19	.715	19	.797	19	.882	19	.964
20	.052	20	.137	20	.214	20	.298	20	.381	20	.465	20	.548	20	.633	20	.717	20	.800	20	.884	20	.967
21	.055	21	.140	21	.216	21	.301	21	.383	21	.468	21	.550	21	.635	21	.720	21	.802	21	.887	21	.969
22	.058	22	.142	22	.219	22	.304	22	.386	22	.471	22	.553	22	.638	22	.723	22	.805	22	.890	22	.972
23	.060	23	.145	23	.222	23	.307	23	.389	23	.474	23	.556	23	.641	23	.726	23	.808	23	.893	23	.975
24	.063	24	.148	24	.225	24	.309	24	.392	24	.476	24	.559	24	.643	24	.728	24	.810	24	.895	24	.977
25	.066	25	.151	25	.227	25	.312	25	.394	25	.479	25	.561	25	.646	25	.731	25	.813	25	.898	25	.980
26	.068	26	.153	26	.230	26	.315	26	.397	26	.482	26	.564	26	.649	26	.734	26	.816	26	.901	26	.983
27	.071	27	.156	27	.233	27	.318	27	.400	27	.485	27	.567	27	.652	27	.737	27	.819	27	.904	27	.986
28	.074	28	.159	28	.236	28	.320	28	.403	28	.487	28	.570	28	.654	28	.739	28	.821	28	.906	28	.988
29	.077	29	.162	29	.239	29	.323	29	.405	29	.490	29	.572	29	.657	29	.742	29	.824	29	.909	29	.991
30	.079	30	.165	30	.241	30	.325	30	.408	30	.493	30	.575	30	.660	30	.745	30	.827	30	.912	30	.994
31	.082	31	.168	31	.244	31	.328	31	.411	31	.496	31	.578	31	.663	31	.748	31	.830	31	.915	31	.997

180°

• 28.

• 26

37°

• 24

20

*α Centauri.*

*The numbers refer to the order of observation in the catalogue.*

30 • 22  
28 • 20  
26 • 18

24 • 16  
22 • 14  
20 • 12  
18 • 10  
16 • 8  
14 • 6  
12 • 4  
10 • 2

16 • 14

12 • 10

10 • 8  
8 • 6  
6 • 4  
4 • 2  
2 • 0

*Preceding.*

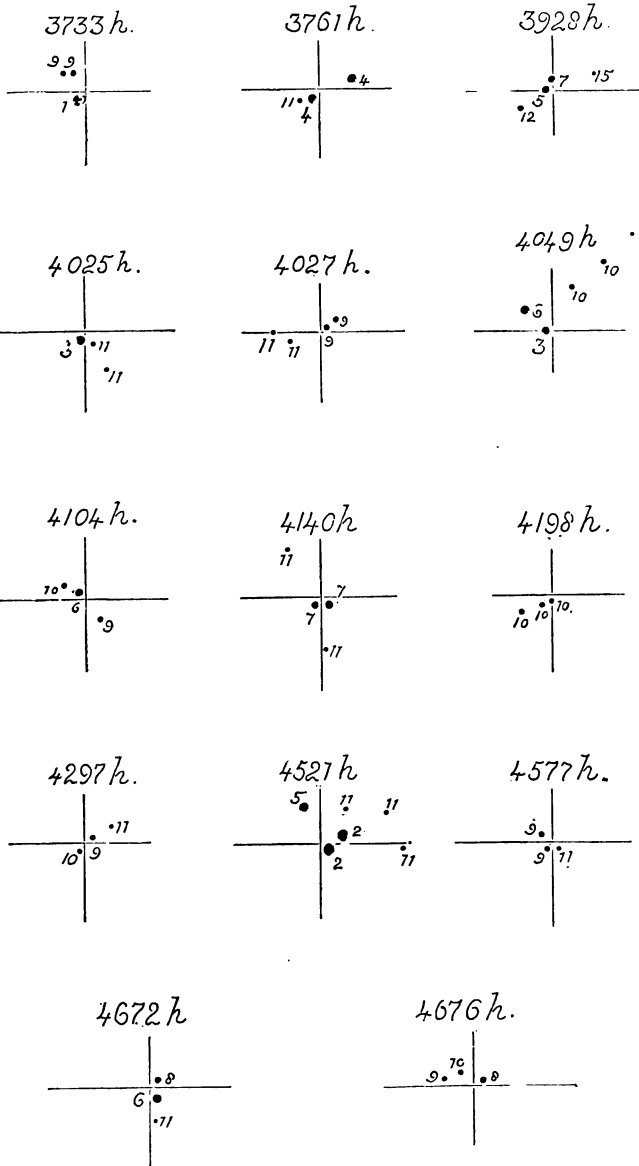






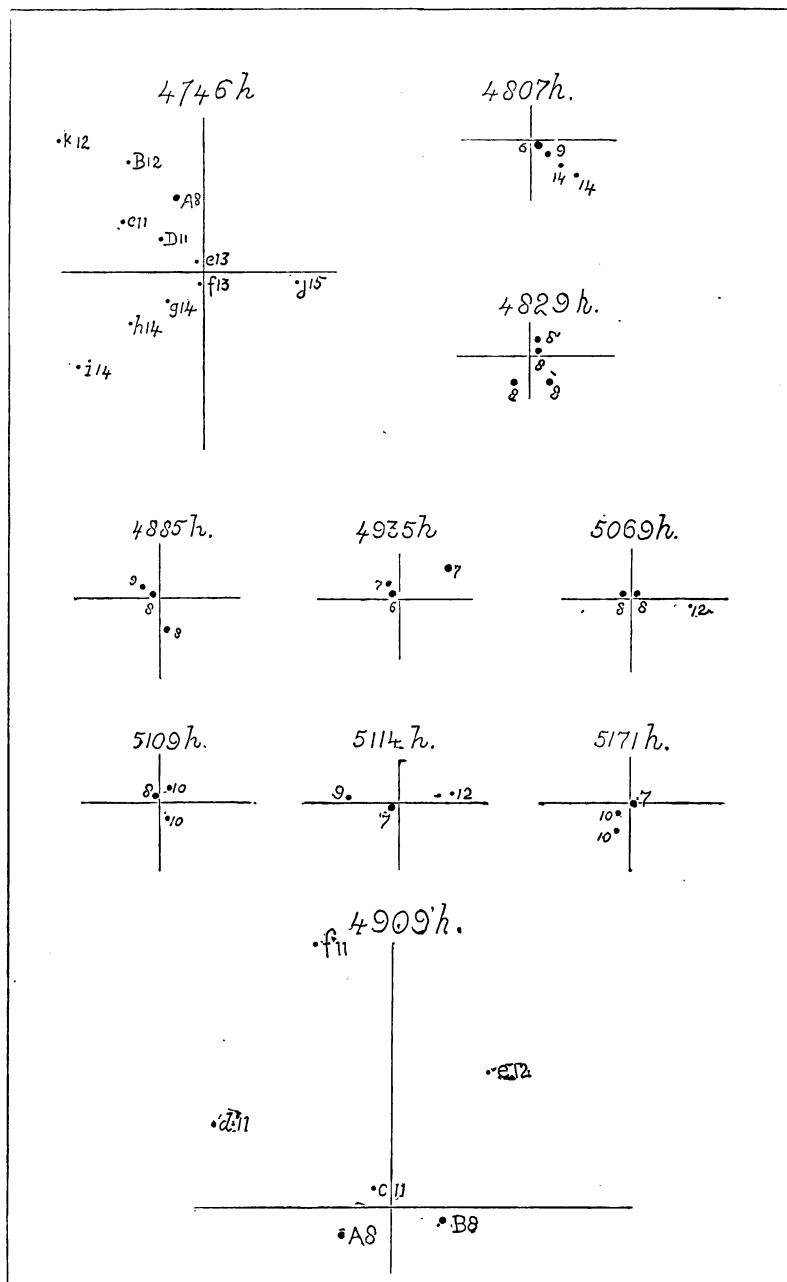


DIAGRAMS OF TRIPLE STARS AND CLUSTERS.—I.





DIAGRAMS OF TRIPLE STARS AND CLUSTERS.—II.



DIAGRAMS OF TRIPLE STARS AND CLUSTERS.—III.

